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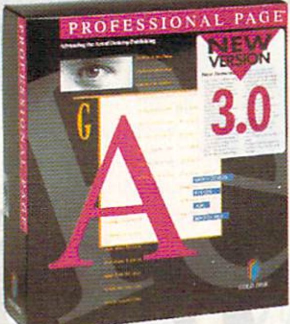
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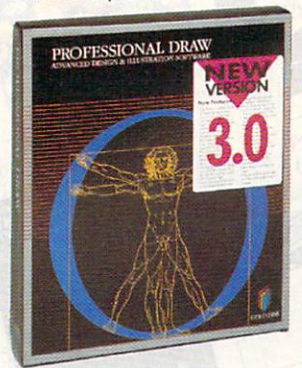
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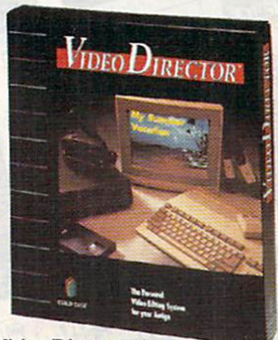
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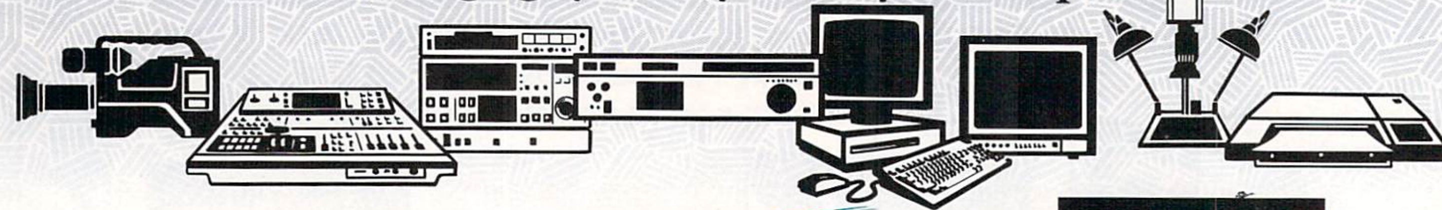
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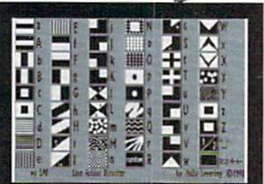
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It will huff and puff and blow the cybersox off any PC/Mac in the house. Check out our special preview of the Amiga 4000, due out this fall.

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EDITORIAL OFFICES: *1-800-441-4403; 1-603-924-0100*

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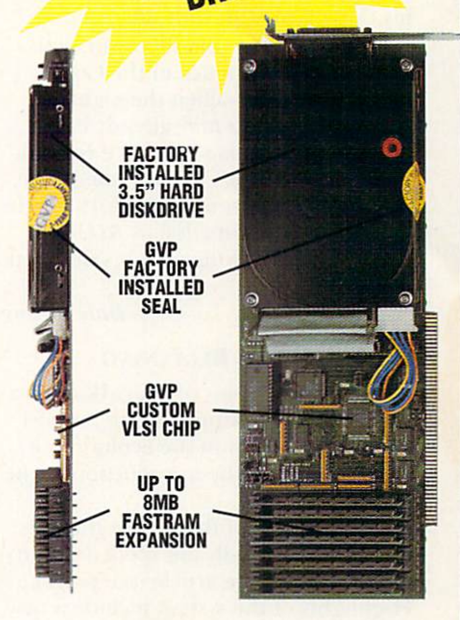
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EDITOR'S DRAWER

The A4000 is Commodore's latest computer, with a new DOS, a faster processor, and a dynamic new graphics chip set. But will it fly?

Bye-Bye Barney

Publisher's note:
This issue marks the debut of Dennis Brisson as editor-in-chief of *AmigaWorld*. He succeeds Doug Barney, who has accepted a position with *InfoWorld*.

We wish Doug well as he leaves behind the luster of the Amiga market—where music, art, animations, and great games are the norm—and returns to a market dominated by spreadsheets, databases and accounting software. Doug anticipates the upcoming challenges of his new position and takes with him many fond memories from his three-year stint with *AW*.

Dennis is a capable successor, with nine years' experience in the Commodore market—albeit the eight-bit side. Some of you may already be familiar with Dennis's work as editor-in-chief of *RUN*, the C-64/128 magazine, since its inception in January 1984. He will continue to function as *RUN*'s editor-in-chief, along with his duties at *AmigaWorld*.

—Dale Strang

An Auspicious Beginning

I take over the reins of *AmigaWorld* at a propitious time. Commodore has just taken a giant step in the evolution of computing with the introduction of the A4000.

The specifics of the newest member of the Amiga family are spelled out in this issue's feature article (see p. 30). Highlights of the system include a new 25-MHz 68040 processor, a new version (3.0) of AmigaDOS, expansion options galore, and the introduction of a new graphics chip set.

Some of you may be thinking: "Oh no, another new machine, another A1000 rehash!" In the past, Commodore has been criticized for introducing machines that feature the same old technology in a brand new package. Whether or not you agree with that assessment, you'll encounter plenty of new and exciting features in the A4000. In fact, there are several reasons we feel justified in referring to the A4000 as Commodore's first new computer since the A1000.

Three reasons are Alice, Paula and Lisa, the most dynamic trio since Charlie's Angels. This Advanced Architecture (AA, pronounced Double A) chip set establishes new standards for desktop video and multimedia. The AA chips offer an expanded choice of colors (you can use up to 256 different colors on a screen at once from a palette of over 16-million colors) and screen resolutions. The machine is also designed to accommodate a variety of memory-storage and expansion options.

Amiga third-party developers now have a great tool to show off their imagination and talent. We've chatted with several company reps who are genuinely excited about creating products for the A4000. We fully expect that vendors in this market will, once again, rise to the challenge and create many interesting new A4000 products in the near future.

In bringing the A4000 to market, Commodore did nothing to jeopardize its standing as the leader in graphics-intensive applications. We predict that the niche they've secured in the high-end multimedia and desktop video market will continue to expand. Among multimedia zealots and DTV devotees, Commodore certainly solidified its reputation by introducing a high-end multimedia and desktop-video machine for an attractive price (also, a trade-up program for this machine may be in the offing, given Commodore's marketing history).

The A4000 will have its detractors. Questions about the feasibility of upgrading existing Amiga machines to the A4000 standards remain unanswered. Also, some may complain that access to SCSI devices is an option, and not a standard feature, with the A4000. However, while critics will never be assuaged, fans will be pleased. This computer promises to excite those graphics groupies and video partisans who are involved in multimedia productions, videos and animations.

In this issue, we hint at the prospect of more good things coming from Commodore. No doubt, the A4000 represents the first of what may develop into a new line of Amigas. In this case, the old show-biz saying, "You ain't seen nothing yet," applies.

I look forward to my tenure as editor-in-chief, which promises to be filled with many new developments from Commodore and the Amiga community. *AmigaWorld* will continue to bring its readers the highest-quality editorial with the latest new developments in the market, the most objective and timely reviews, informative and entertaining features and useful and easy-to-understand tutorials. Be sure to stay tuned.

Dennis Brisson

OVERSCAN

News, New Products and Networks

Art in Action

How do you parlay experience as a race-car mechanic and a driller on a Mediterranean oil rig into a career as a top graphics designer? For British-born Ray Masters, the answer was: Get an Amiga!

If you're not from South Florida, you may not be familiar with Masters' name, but you're sure to have seen his work. It can be found on beaches and ski slopes throughout the world. His bold, colorful designs adorn fashion items from international sportswear giants such as Elho Brunner, Ellese, Swatch, and Wilson. (Elho Brunner sold $15 million worth of clothing bearing Masters' designs in one year.) Masters has also designed striking posters and programs for major sporting events, including the Toyota Grand Prix, the World Water Ski Championships, and the Chris Evert Pro-Celebrity Tennis Tournament (pictured at the right), to name just a few.



Sketching on a Digital Canvas

Some time after his apprenticeship on the oil rig off the coast of Sicily, Masters washed up on the Florida coast at Delray Beach. His first American design venture was making T-shirts—by hand—for the local sun-and-surf set. He soon latched on to the just-released Amiga 2000, and with an early version of DeluxePaint and an HP PaintJet printer, he quickly expanded his operations far beyond the beaches north of Miami.

Oddly enough, Masters—who now presides over a four-person company, Ray Masters Productions, that requires a high-priced firm of tax accountants—has retained the simple computer-design approach he employed in the early days. No 24-bit graphics, 16-million-color palettes, and fancy enhanced-display devices for Masters: "I'm basically a DPaint artist. I always use the same form of manipulation. I'm a low-res, eight-color man. I don't rely on the technology as much; I depend on it as a canvas." Yet, despite this electronic sketch-pad approach to computer graphics, Masters is one of the most successful Amiga artists in the world today.

Jack of All Trades

While acknowledging that the Amiga has made a crucial difference in his work

Video Edits, JPEG Style

Digital Micronics' new **Digital EditMaster** ($2495) turns your A2000 or A3000 into a video-editing suite and promises to provide capabilities that would normally cost you upwards of $100,000. The heart of the system is a video compressor based on full-motion JPEG technology and LSI Logic's JPEG chip set.

In real time, the board digitizes, compresses, and stores traditional video segments onto your Amiga's hard disk, where you can edit and modify them. The board is capable of compressing and storing typical animation frames to a hard drive on a frame-by-frame basis, and you can play back the result in real time directly to tape, without needing a single-frame recorder. (RS# 130.)

Extra Explanations

Baffled by Workbench or ARexx? Help is as close as your bookshelf. **Fast Guide to Workbench** (*Vidia*, $8.95) covers Preferences, system programs, utilities, and tools, Commodities and their hot-key codes, fonts, gadgets, keyboard shortcuts, and other operating-system topics. To make your own crib notes, the booklet includes blank function key and numeric keypad overlays for reference templates. For a concise reference to ARexx commands and functions, consider **Fast Guide to ARexx** (Vidia, $8.95), which describes each command's syntax, key words, options and results, as well as providing general language conventions. (RS# 112.)

If you prefer a walk-through approach, flip through the pages of **The ARexx Cookbook** by Merrill Callaway (*Whitestone*, $24.95). Supplemented by thorough discussions of commands and techniques, lessons increase in complexity from writing simple stand-alone programs to making complex connections among multiple applications.

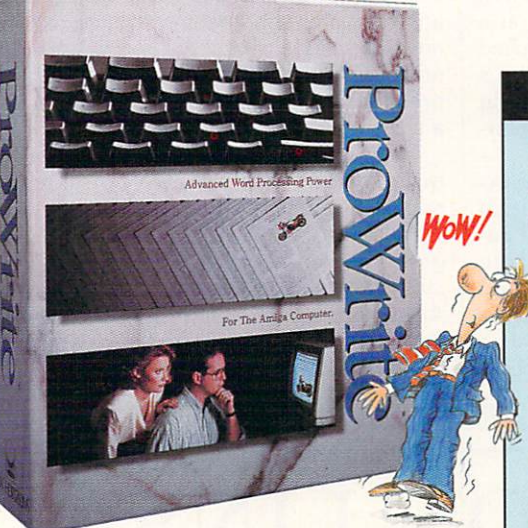
Whether you're a rank beginner or a seasoned programmer trying to control PostScript via ARexx, The ARexx Cookbook promises enlightenment. For easy and thorough reference, the book's index and margin notes include page numbers for William Hawes' and Commodore's ARexx manuals, documentation for application software discussed, and the Cookbook itself. An optional ($5) companion disk rounds out the package. (RS# 113.)

To locate the vendors of products mentioned, see the "Manufacturers'/Distributors' Addresses" list on p. 104.

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- Outline font support.
- Insert IFF and HAM pictures in your documents.
  - Automatically wrap text around pictures.
  - Multiple columns, with snaking or side-by-side text flow.
- Spelling checker with 100,000 word dictionary.
- Thesaurus with 300,000 cross-references.
- Full system clipboard support.
- HotLinksTM support.
- Undo and Redo command.
- Mail merge.
- AREXX port.
- Macros, when used with AREXX.
- Name and search for pictures in a document.
- Speaking capability, to read back document contents.
- Separate odd and even page headers and footers.
- Paragraph sorting.
- Automatic page numbering, with five different page number styles.
- Insert current date and time, with five different date formats and two time formats.
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- User-set document comments. .
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- High-quality graphics printing for jaggie-free output.
- Print NLQ text and graphics at the same time.
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- Import and export Professional Page text files.
- Comprehensive keyboard commands.
- Easy to use "3-D" user interface look.
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Circle 65 on Reader Service card.

and its success (he states he could never have been as prolific and efficient without it), Masters did come equipped with some natural talent of his own. After leaving Harrow, the prestigious English public school, at age 16, he worked as a photographer and graphics artist at a London advertising agency. Sandwiched between his auto-racing days and his stint as an oil driller, he also worked in design and marketing for the high-powered UK-based Norwood Group.

All of this varied experience finds expression in his work. Masters' love of sports, knowledge of race cars, and adventures on the high seas inform both the style (broad, bold, energetic) and subject matter of his art. As the title of his media kit/portfolio attests, his is "The Art of Action." *—Jan Jackson*

Multimedia Makeover

Scala MultiMedia 2.0 (also called Scala MM200) packs even more features into ***Scala***'s popular multifunction multimedia program. MM200 adds 25 more special effects, an unlimited-length horizontal crawl line; out-wipes; area transitions; a link function for simultaneous movement of multiple text lines or logos; variables and conditional branching for interactive presentations; support for DCTV stills and animations; AnimLab (an animation-enhancement utility); and the long-awaited sound support. You can now synchronize music and sound effects with your presentation graphics and animations, as well as record your own sounds with a sampler board.

The program's interface was also revamped. As an alternative to Scala's familiar (and now configurable) main menu, the Scala Shuffler lets you view and rearrange thumbnail versions of your presentation pages. Reaching out for more power, the Scala Ex system of control modules for external devices and programs lets you incorporate into your presentations images from laser-disc and still-video players, audio from MIDI devices and CDTV CDs, and input from ARexx-compatible programs. For new owners, Scala MM200 retails at $495. Registered owners of Scala should contact the company for upgrade information. (RS# 115.)



ON-LINE SCAN

By Tim Walsh

Last month, I addressed the benefits of Internet, the network layer service recently made available through Portal. With increased versatility and interaction between the nets, "telecommunicationspeak" is trickling down from the high-end business and education fields to the hobbyist level. Maybe you've heard of things like Telenet, Usenet, and Tymnet, but is is clear just what they are?

For a frame of reference on how these various services relate to telecommunications in today's networks, a Reader's Digest look back into computer history is in order.

Telecommunications History 101

In the 1970s, computer use was generally limited to a teletype-like printing machine that read punched cards or inch-wide rolls of paper. These terminal machines were connected with others via phone lines to a large mainframe, or host computer, across town or across the state.

These network-connected hosts and terminals constituted early-generation LANs, or local area networks. Telecommunications pioneers worked to create voluntary protocol standards for the network of terminals and computers. Host computers were tied into local networks, and began to serve as "gateways" to such network services as CompuServe.

In the course of the next decade, network layers such as Internet came on the scene. To get the various smaller nets working in harmony, Internet Protocol established standards for sending e-mail and other data between servers and host computers, opening up the possibility of data sharing with all platforms having common access to a network. Portal is a great example of such data sharing taken to a new, low-cost level on the nets.

Many education centers and large corporations use UNIX-based mainframes, workstations, and even UNIX-based Amigas to send e-mail and other data to a variety of nets. Usenet is the network of choice for UNIX-based telecommunications, and thus UNIX is widely represented on networks such as CompuServe. Consequently, a lot of messages on networks that support gateways and direct Usenet connections, such as Portal, will have the address of the author in a username, site, network format.

A generic, simplified example might appear as timw@cs.brown.edu. The first part of the sending party's name is just that—a person's on-line name or screen name. That is then followed by the "at" sign and the server's site or location. Even the originating network is sometimes included; in the above example, it's Brown University. Some of the smaller nets keep this information intact with the e-mail, so you can typically figure out where the message originated.

Making Connections

Telenet and Tymnet are not networks; rather, they serve as telecommunication packets for connecting between networks. For instance, with a call to one number listed in the White Pages, I access my accounts on every network that I mention in this column (except GEnie), plus a few others such as America Online.

Packet services can be further divided into smaller specialties such as Sprintnet and PC-Pursuit. Familiar to many Amiga users, PC-Pursuit is the name of the outdialing service that can reduce the price of calls for computerists without local numbers for Telenet and Tymnet. FidoNet is lesser known because it's outside of the normal network circle, being comprised of large-scale BBS systems.

So, now there you have it—a glance at some of the words that end with "net" and how they came to be common in Amiga telecommunications.Of course, this overview hardly scratches the surface. There's a lot more of this information online; here are some good places to start looking:

BIX
800/227-2983
617/354-4137

CompuServe
614/457-0802
800/848-8199

GEnie
800/638-9636

Portal Communications
408/973-9111 □

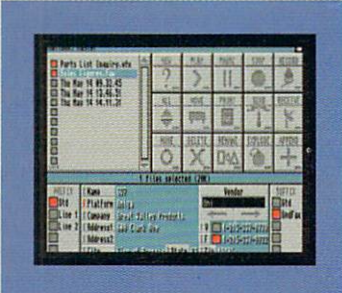
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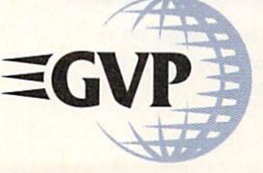
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★ Intuitive graphic interface for easy self-teaching.
★ MIDI-in capability.
★ Direct sequencer to editor interfacing.
★ On-screen sample diplay of up to 31 samples.
★ HIFI recording for high quality playback.
★ Multiple effects for each note.
★ Real time oscilloscope and spectrum analysis.
★ Graphic editing and freehand drawing of waveforms.
★ Direct editing of individual sample numeric values.
★ Sampling maximums of 51,000/sec (mono) 38,908/sec. (stereo).
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Ch-Ch-Ch-Changes...

The more things change in the Amiga industry, the more you need to know.

For instance, you should know that ***Octree*** has changed locations (see new address on p. 104) and has picked up Ditek's **DynaCADD** 2-D/3-D design program for distribution. The program is well suited to work with Octree's own Caligari 3-D modeling, animation, and rendering software. According to Octree, you can "design in Caligari, follow up with precision design in DynaCADD, and then animate and render in Caligari." DynaCADD, which has a suggested retail price of $995, is available for $499 (plus $30 shipping and handling) from Octree. (RS# 122.)

The developer of **Video Music Box** has also made two changes: in its name and its product. The Menasha, Wisconsin, developer has changed its name from Digital Expressions to ***Digital Expressions Research***. The change was necessary because, unknown to the Wisconsin firm, an established games manufacturer in Cleveland, Ohio, had previously reserved the name Digital Expressions. Product changes come in the form of Video Music Box 1.4 ($109), which adds Workbench 2 compatibility, new parameters for controlling pitch ranges and randomization, editing functions, and more. The upgrade is free for registered users. (RS# 123.)

Lissa 1.2, the 3-D curve generator from ***Technical Tools*** ($35), produces more complex objects than before (you can create "wiggles within wiggles"), supports more modelling packages, and offers an enhanced interface, with icons for frequently-used controls and more comprehensive help features. The upgrade is free to registerd owners. (RS# 124.)

ASDG's **ADPro** just keeps getting more capable. The latest module ($200), aimed at video professionals, allows you to exchange digital images stored on 8mm cartridge tapes between an Amiga (equipped with a Commodore SCSI controller and Exabyte 8mm tape drive) and an **Abekas** A60, A65, or A66 **digital-disk recorder**. You don't have an Abekas system, but need to send work to a post-production house that does? You can create digital video streams (essentially treating the tape drive as a single-frame recorder). (RS# 125.)

Also expanding the Amiga's video capabilities is ***Interactive MicroSystems***. The firm's **MediaPhile** video-editing setup now provides support for Sony VISCA protocol decks as well as VBOX control for Sony CTL-L/LANCS-port decks and camcorders through the Amiga's serial port. (RS# 126.)

MIDI Sample Wrench 2.0, the updated 16-bit sound editor from ***dissidents*** ($299), gives musicians, audio engineers, and videographers a toolbox-full of new options. The software works with a variety of MIDI keyboards as well as IFF samples, and it reads and writes several file formats.

The new Wrench promises extensive waveform-viewing options, from overviews to a few points, and you can calibrate waveforms in terms of sample points, seconds, or SMPTE frames. It also includes more advanced digital signal-processing features, as well as resynthesis tools that let you expand or compress waveforms in time without changing pitch. The program works with DOS versions 1.3 and higher, and is linkable via ARexx. Registered owners of earlier versions can upgrade for $20. (RS# 127.)

Designed with the developer in mind, version **2.0** of **ARexxDB** ($125) is the "records manager for the serious Amiga user," according to ***JMH Software***. In addition to ARexx support, the program offers new features that include record searching, automated indexing, a query language, and a utility for creating files. ARexxDB is a database engine that you can easily customize, and it imposes no upper limit on either file or record size. With ARexx DB, you can develop database applications using your own custom interface. (RS# 128.)

EasyScript has upgraded some of its products, including **LabelDex!** ($74.95), which now promises an easy way to make professional-looking video and audio cassette labels for cassette splines and faces. This integrated VideoLibrarian module supports HP LaserJet, DeskJet, Epson, and PostScript-compatible printers.

BibleReaderPro!, which replaces BibleReader!, includes an 800,000-word concordance, supports Amiga speech, does not require a hard drive, and comes in four versions (KJ, NI, NKJ, and NASB), each selling for $89.95.

The higher-end **BibleScholar!** supports speech, too, with version **2.0**. It also comes in PAL and NTSC display versions, and offers a 640×400 interlace display. Further, you can fetch search results with the click of a button. (RS# 129.)



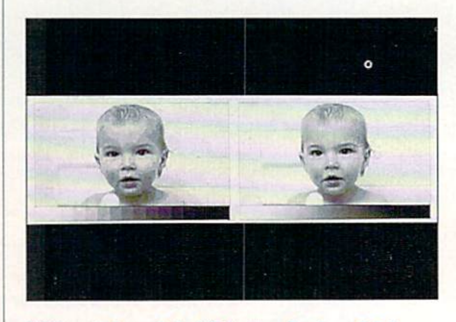
Workbench 2.1 is already shipping with the Amiga 600, and it's destined to become available for other Amigas. (Commodore has not yet settled on a release date for upgrade kits.) So what can you look forward to in 2.1? There are several brand-new features, including CrossDOS, the favorite MS-DOS/AmigaDOS-format transfer utility which now also allows access to MS-DOS formatted floppy and hard disks.

The new Local Preferences editor lets you read screens of 2.04-supporting software in any of several languages. An installer utility, which automatically integrates the new Workbench on your system, also comes with this release, as do printer drivers for PostScript devices and Canon's BubbleJet.

Another printer driver, for the HP DeskJet, has been enhanced since the 2.0 release; it now supports the popular HP 500 Color DeskJet. Other enhancements include simplified installation and activation of printers, keymaps, monitors, and DOS drivers. The Format and DiskCopy functions now provide graphical interfaces that allow you control.

True Color Prints

No longer is your printer limited to 4096 colors and 16 shades of gray. **TruePrint/24** (*ASDG*, $89) prints 16-million color (24-bit) and 256-shade grayscale (eight-bit) images on most Preferences-supported color or black-and-white printers. Capable of outputting images at any size (even poster proportions), TruePrint/24 offers 11 dithering and halftoning techniques, including a 32-shade gray-scale for such character-only devices as daisy-wheel printers. (RS# 111.)



Without TruePrint/24, the Amiga OS is limited to 16 shades of gray (left); with it, 256 shades are possible.

Haitex Hails Harlequin

Haitex Resources, maker of X-Specs 3-D stereo-vision glasses, now distributes the long-awaited **Harlequin** 32-bit framebuffer from Amiga Centre Scotland. The board, available in NTSC as well as PAL display formats, promises to coexist with Great Valley Products' IV24 and NewTek's Video Toaster, and it fits into either an A2000 or A3000. It comes in several memory configurations, from 1.5 to 4MB of RAM. It provides composite RGB output and an optional alpha channel, both of which you can toggle via software. Harlequin comes with lots of software, including a program that lets you scale and convert images to other formats, and a real-time 24-bit slide-show program with over 30 transitions. Among outside products that support Harlequin directly are Imagemaster (Black Belt), ADPro (ASDG), Real 3D (Activa) and Caligari Broadcast (Octree). (RS# 131.)

Get in Touch

Why point and click when you can reach and touch? The **CT-Amiga driver** (***Carroll Touch***) lets you use infrared touch screens with your Amiga. The driver both emulates the Amiga's mouse and allows a mouse and touch screen to operate concurrently. Compatible with AmigaVision, the driver is free with the purchase of the company's scanning infrared touch frames, which include systems for 14-inch Zenith ZCM-1492 flat-tension and Mitsubishi AUM-1381A Diamondscan monitors. (RS# 110.)

Climbing the Family Tree

No matter how prolific your ancestors were, ***The Puzzle Factory*** claims that its genealogical database, **Origins** ($85), is up to keeping track of them. In addition to cataloging over six million relatives, Origins can track multiple marriages, step-children, unmarried parents, and other unorthodox situations. You can print reports on people, family group sheets, pedigree and descendants charts, and Tiny-Tafel listings, as well as import and export GEDCOM formatted data. To help you connect faces with names, Origin even stores IFF images. (RS# 114.)

Accountant Not Included

Bring your business's books on line with **Business Front** (***Designing Minds***, $129). Featuring General Ledger, Accounts Payable, and Accounts Receivable modules, this business accounting program can handle up to 32,500 records per file, provides password protection, carries balances from year to year, and allows periodic and fiscal compaction. In the General Ledger you can define a chart of accounts, assign account and subaccount numbers for job costing, and print the customizable reports.

Accounts Receivable offers automatic interest calculations for overdue payments, aging reports, user-definable terms of sale, automatic discounts based on payment terms, and complete customer information. Accounts Payable features aging reports, bills due reports, a check register of transactions, and the ability to mark bills for partial or full payment and to search for payments by index or vendor number. (RS# 117.)

Official Immigration

Long a popular import, the AMOS programming language is now available in an NTSC version—**American AMOS** ($110). Featuring more than 500 commands, the language is optimized for graphics and sound manipulation, and, with the new version, no screen-size adjustments are needed. ***Europress Software*** has also set up a US technical support line (219/874-6380) and BBS (219/874-0367) to give AMOS users easier access to customer support. (RS# 118.)

Memory Magic

Offering support of up to one gigabyte of virtual memory, **GigaMem** (***Pre'Spect Technics***) gives welcome relief to systems with filled-to-bursting RAM by swapping data from memory to either a hard-disk file or partition. To optimize performance, the program supports caching and monitors memory-access frequency for more intelligent memory swapping. GigaMem runs on all accelerated systems with MMUs and promises to work with all hard-drive controllers. For use with Pre'Spect Technics' ALF 3 Oktagon controller, GigaMem sells for $98; for all other controllers, the price jumps to $149. (RS# 119.)

Faster than the Emergency Room

Whether your floppy disks are failing or your hard drive needs help, ***Moonlighter Software Development*** has the right medicine. **Ami-Back Tools**' ($79.95) medical bag includes GP, a disk optimizer; Disk Analyst, a program that checks disks for potential problems and then makes the appropriate repairs; 911-Recovery, a specialist in recovering deleted files and data from crashed disks; Antiseptic, a disk wiper that clears everything from your disks; and Lab Test, a utility that checks and compares checksums for file corruption and virus protection. Overseeing these programs is the Administrator interface, which lets you set up, schedule, and perform whatever tests you desire. (RS# 120.)

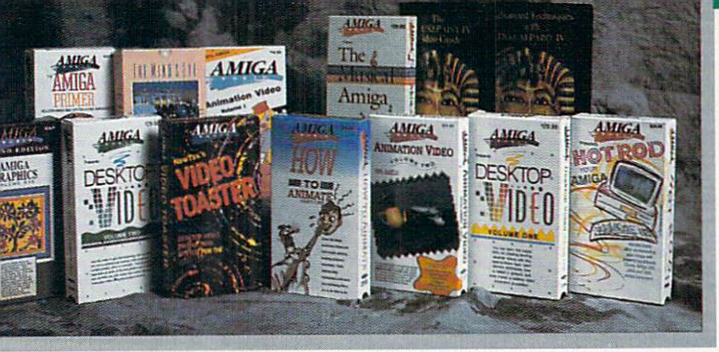
Follow the Stars (and Satellites)

If you're in search of space-science software, the chances are that ***Kinetic Designs*** has the right program for you. The company's collection of public domain and shareware programs includes satellite trackers, planetary-orbit calculators, siderial-time calculators, weather-related programs, deep-sky databases, gravity simulations, telescope designs, and space art. A complete catalog of programs is available, at a cost of only a self-addressed envelope with two stamps, while Amiga Space 12pak, a 12-disk compilation of programs, will run you $29.95. (RS# 116.)

Make Your Point

A 3-D object editor and converter, **Vertex** (***The Art Machine***, $40) offers all the standard object-editing tools (including single-point editing), plus more exotic distortion options, such as multiply, scale map, twist, randomize, and gravity. In addition, you can bevel fonts, create 3-D fractal objects, separate and combine objects, cut windows, and add face and edge divisions. For further customization, the program has an ARexx port. On the conversion side, Vertex supports Imagine, Turbo Silver, LightWave 3D, Sculpt 3D, Geo, and Wavefront formats. (RS# 121.)

Overscan is compiled by Barbara Gefvert, Linda Laflamme, and Tim Walsh. Send your news, new products, and network information to Overscan, *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458. ■



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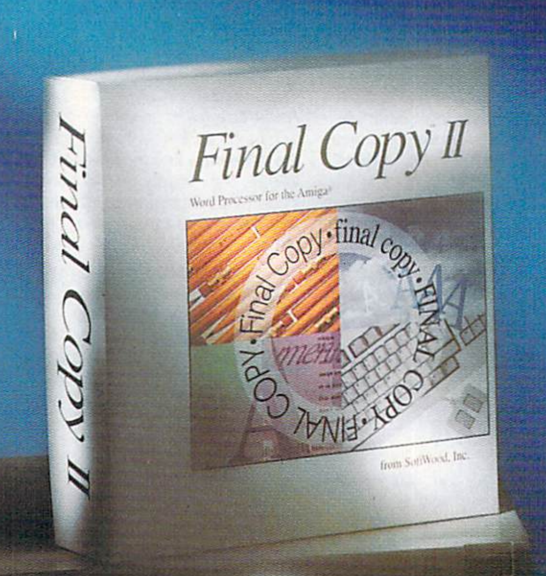
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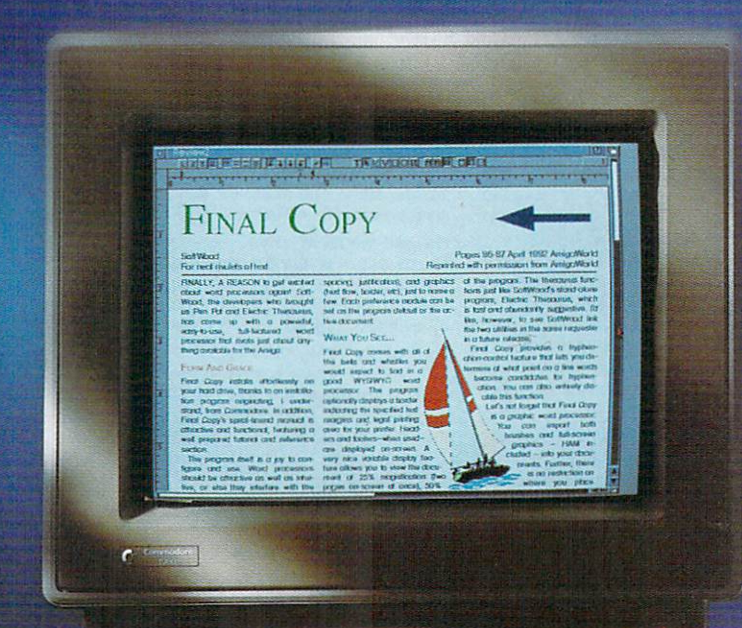
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JUST TYPE!



Legibility & Readability

Typographic clarity comes in two flavors: legibility and readability. Even though much of the typographic community treats them as such, they are not interchangeable terms. Different typefaces have varying degrees of legibility; while typography should be readable.

Legibility is generally considered to be the ability to distinguish one letter from another in a particular typeface design. Readability, on the other hand, is the degree of ease with which typography can be read. As a result, it is possible to use a highly legible typeface and create unreadable typography. While carefully constructed, readable typography cannot restore missing legibility to a typeface design, it can enhance the message presented by a less than ideal typeface.

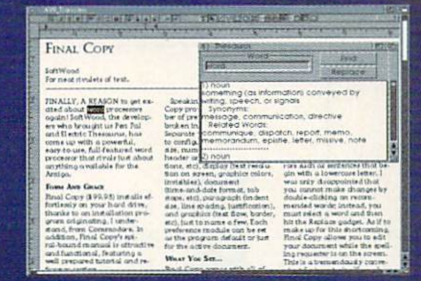
For practical purposes, the definitions are not all that important. What is important is that you are aware of the factors that can affect typeface legibility, and the ways readability can be enhanced -- or reduced -- through typographic arrangement.

Studies and Reports

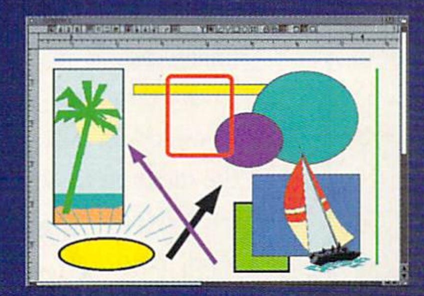
Most of us have heard about legibility and readability studies and their resulting reports. You know, the ones that typophiles refer to when they discuss legibility or readability, and supposedly answer all questions about these two topics. Well, referring to these reports and actually trying to use them can be two very different things. In fact, just trying to find them is difficult.

They are not in neatly bound volumes readily purchased at the local bookstore. Chances are, unless you live in a big city, your public library doesn't have them. Teachers of the communication arts do not often make them available to their students, and manufacturers of typesetting and printing equipment do not include them in their corporate libraries.

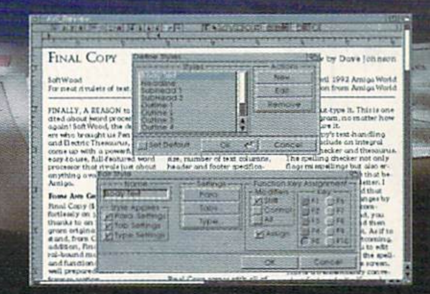
So what and where are these mythical studies? For the most part, they were published as articles in trade journals and scholarly magazines, and they were not normally intended for typographers or graphic communicators. Educators, technical writers, journalists and the like, were their usual tar-



You want a document that reads well in addition to looking good. Final Copy™ comes with a 144,000 word speller, 1.4 million word thesaurus with definitions, master pages, style sheets, paragraph sorting, math, mail-merge, automatic hyphenation, and user-defined tab stops to assist you in your writing.



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Style sheets and master pages are features you can really use to ensure your documents are created in a consistent and well-planned manner. Fully editable page views let you work in several levels of reduction and magnification. Multiple snaking columns, left/right pages, and title page options are easy to use.

Comparison Chart	Outline Fonts Included	Style Sheets	Master Pages	Line, Box, Oval Drawing Tools	PostScript™ Support	Thesaurus Responses	Speller Words	Automatic Hyphenation
Final Copy II	35	Yes	Yes	Yes	Excellent	1.4 million	144,000	Yes
ProWrite 3.3®	0	No	No	No	Limited	300,000	100,000	No

Comparison Chart	Snaking Columns	24 Bit ILBM Support	Editable Page Views	Outline Font Processing	Print 1 pg. Document	Math Support	Outline Fonts 1.3 and 2.0	Print Quality
Final Copy II	1-6	Yes	25-400%	Fast	53 sec.	Yes	Yes	Excellent
ProWrite 3.3®	1-5	No	No	Slow	2 min. 5 sec.	No	No	Fair

System Requirements: Amiga® with at least 1 megabyte of RAM and either a hard drive or 2 floppy drives.

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For years, the Amiga® name has been synonymous with multimedia. We've proven to the world that when you combine the brilliance of video, audio, and animation with a computer, incredible things can happen.

Well, now that the world has finally caught on to the concept, Commodore takes the medium to an entirely new level: With the all-new Amiga 4000.

The A4000 frees you to do more multimedia computing for less than any other personal computer. It empowers you to create exciting professional television effects, stimulating interactive training programs, and more powerful presentations like never before.*

That's because the Amiga is the only computer designed as a multimedia machine from the ground up. Which means the A4000 doesn't suffer the handicaps other so-called multimedia machines endure. There is no need for costly, cumbersome add-ons, no need to kludge together potentially incompatible components. So it gives you spectacular multimedia performance right out of the box, at a price that keeps the cost of imagination very realistic.

Sit in front of the A4000 and instantly you enter a world filled with high-resolution graphics simultaneously displayed in up to 256,000 colors from a palette of over 16.8 million hues. You gain a heightened ability to create exciting graphics with full video overscan. And you attain the freedom to create complex animations at a full 30 Frames Per Second, not at 15 FPS.

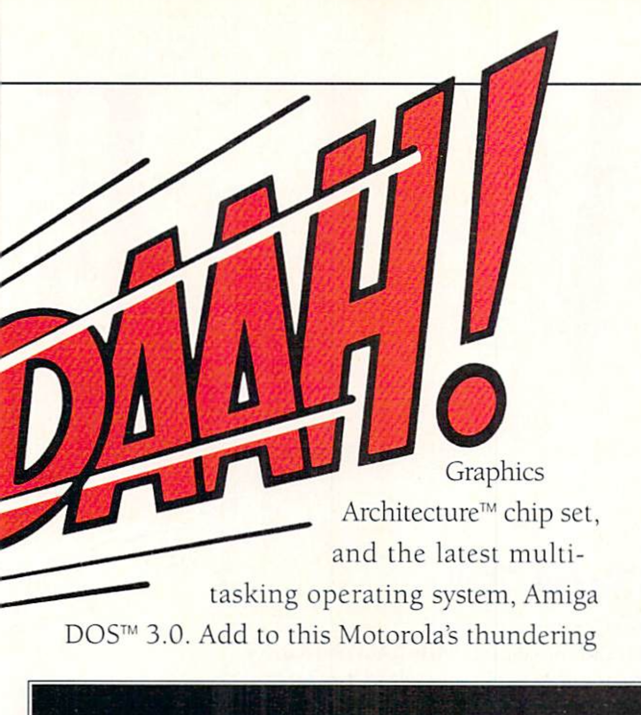
You even have the option of choosing from a spectrum of high resolution modes while still maintaining NTSC scan rate capability.

The Amiga 4000 features the powerful new Motorola® 68040 microprocessor.

All this multimedia muscle, of course, comes through true design elegance. At the heart of every A4000 lies our new, unique, custom coprocessors, the Advanced



The Amiga 4000 gives you the ability to easily create real-time, colorful animations.



Graphics Architecture™ chip set, and the latest multi-tasking operating system, Amiga DOS™ 3.0. Add to this Motorola's thundering

expandability, compatibility, and the capability for hundreds of business applications.

In fact, the A4000 even fits seamlessly into whatever operating system you're currently using by coexisting and communicating with your Macintosh® or MS-DOS computers in a Novell® network.*



With a dedicated chip for audio, the A 4000 sounds like nothing you've ever heard.

Announcing The Amiga® 4000. The Encore To The Most Powerful, Cost Effective Multimedia Computers Ever.

68040 Chip (which other computer companies consider to be enough on its own), and not only is the A4000 blindingly quick, it literally gives you true workstation power.

Of course, there's much more to the A4000 than just being the ultimate tool for creativity. It also comes with a large capacity hard drive, and a 1.76 MB dual speed high density floppy drive which, combined with Cross-DOS, allows you to read and write MS-DOS® files. And a design that allows for

And we back all this technology up with a potent service package that is second to none: Including a 24 hour hotline and optional on-site service.**

To find out more about Commodore Multimedia and the all-new Amiga 4000, call 1-800-66-AMIGA. (In Canada, call 1-800-661-AMIGA.) We'll show you an outstanding performance that will certainly bring you to your feet.



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REVIE

Professional Draw 3.0

High-level structured drawing.

Gold Disk, **$199.95.**
Hard-drive installable.
Not copy protected.
2.0 compatible.
Accelerator compatible.
Minimum system: 2MB RAM, hard drive.
Recommended system: 2MB RAM, hard drive, ARexx.

ProVector 2.1, PSImport 1.0

Structured drawing and PostScript file manipulation.

Stylus Inc., **$299.95/$89.95.**
Hard-drive installable.
Not copy protected.
2.0 compatible.
Accelerator compatible; FFP version included.
Minimum system: 1MB RAM.
Recommended system: 1MB RAM, ARexx.

Both Professional Draw 3.0 and ProVector 2.1 implement structured drawing and PostScript, but with different emphasis. While Professional Draw 3.0 excels at structured drawing, ProVector 2.1 proves to be the most help with PostScript output and exchanges.

Professional to the Core

Pro Draw has, arguably, the best user interface of any personal computer for creating Bézier curves. In Pro Draw, unlike other programs, all the deselected anchor points and oars (the control points protruding on either side of a line) leave white afterimages on the gray background that you can refer to while you are dragging an oar or anchor point. Similarly, when you drag an oar to alter the curve of a line, you can clearly see both the initial curve and the new curve. If you decide that you prefer the original curve, simply press the Esc key to abort the change. Even the Mac's venerable Adobe Illustrator doesn't offer this convenience.

So, what has version 3.0 brought to this superb drawing tool? First, Pro Draw 3.0 finally has Undo and Redo commands. In addition, it lets you import 24-bit bitmaps and rotate and scale them with the same tools you use to manipulate drawings. You can now double-click on the Rectangle tool to set a radius for rounded corners. To speed screen redraws, 3.0 lets you keep some objects in wireframe format while viewing others in WYSIWYG.

To locate the vendors of the products reviewed, see the "Manufacturers'/Distributors' Addresses" list on p. 104.

One of the biggest additions is the Function Genie tool, which allows you to access many ARexx scripts. When you execute one, a message explaining what you should do next is displayed at the top of the screen. One of these Genies moves only selected points on a line, another allows you to position an object at an exact layer, and so on. They are very useful, but the Function Genie tool has usurped the place of the Hand Move tool. The latter was always a bit unpredictable, but it came in handy in case you needed to nudge a page a bit in some direction.

Gold Disk has also improved text handling somewhat. You can now edit text directly on the page, although it goes a bit slowly. Creating a small text file and importing it is usually the better method—especially because Pro Draw still does not have the ability to change a font once the text is on the page. If you want to change the font or the tracking, you must delete the text and import it again. One disappointment: Because the manual stated that you can access characters from the extended character set by pressing the Alt key and entering the ASCII value on the keypad, I thought I would finally be able to use true left and right double quotation marks, but, sadly, they are still not available.

The FontManager program supplied with Pro Draw 3.0 is an extremely valuable addition to the package. It allows you to convert Type 1 PostScript fonts into Compugraphic format, which you can use for high-quality screen displays and dot-matrix printouts with both Pro Draw and Professional Page. If you want to use PostScript clip art, however,

W S

Pro Draw will not help you; on the other hand, ProVector will.

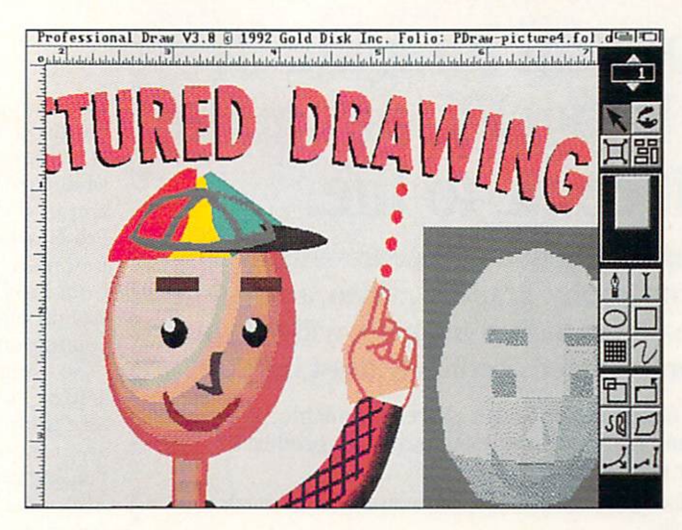
Rhythm of a Different Drummer

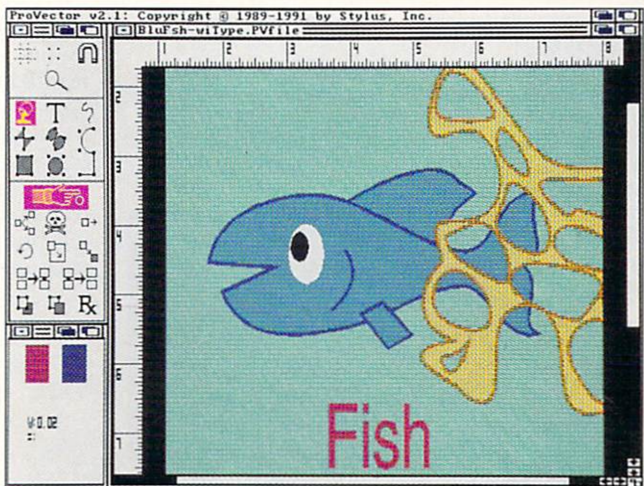
ProVector 2.1 is a breed of its own. Most structured drawing programs won't let you work in WYSIWYG mode, but in ProVector, you do everything in that mode, with all the colors and line weights displayed. Contrary to the norm, ProVector has no wireframe mode. Most structured-drawing programs require an extra step to make a corner when you draw curved lines. ProVector's primary drawing tool operates in the reverse fashion: You have to go back and adjust your curved line (a simple enough procedure) if you want your line joins to be contiguous or tangential. Alternatively, its Smooth Polygon tool automatically creates averaged smooth curves for your whole line (you do not have to drag anything while you are drawing the line). You can later edit the oars a bit.

ProVector's drawing tools are unusual, but they have a surprisingly pleasant feel to them, especially the primary drawing tool. When you drag the mouse, you drag out an oar from the previous anchor point; when you let go, the oar from the current point is attached to your cursor. Click again to put it in position. The Rectangle tool can actually create polygons with any number of sides, and, likewise, the Circle tool can generate arcs and pie-shaped wedges. The program comes with some ready-made pattern fills and allows you to create your own (displaying them slows down the program). You can also control ProVector via ARexx to automatically build graphs and charts from databases.

While its tools for creating graphs, charts, diagrams, and simple illustrations are excellent, I found several of ProVector's line-editing procedures difficult. When I "uncurve" a point on a line, I expect the oars to retract into the point, and not transform into additional points. Similarly, the Make Curve command does not cause oars to spring out of the point; instead, it turns the two adjacent points into oars. Luckily, the supplied ARexx macros offer an alternative to these methods.

ProVector has some other convenient features: You can scale or rotate an object simply by typing a number and ending with the appropriate keystroke. You can set any number of undo levels and cut and paste from multiple windows. You can put elements of your drawing on separate layers and temporarily hide them, as in a CAD program. The Change tool lets you be very specific about painting a particular object with the current default settings or vice versa. In the case of merged objects (objects with holes in them), however, the default settings I made seemed to affect the object immediately, rather than waiting for the signal from the Change tool.





Two approaches for an interface to structured drawing: Professional Draw (top) and ProVector 2.1 (bottom).

PostScript Pro

ProVector 2.1's exemplary PostScript skills come from an add-on module called PSImport, which lets you import PostScript or Encapsulated PostScript files. For my many test drawings, the module has performed very well. If it encounters an unfamiliar command, it displays an error message. When you click Okay, it continues importing the file. ProVector 2.1 cannot recognize filled open objects, so it closes them by drawing a border all the way around. Similarly, it cannot recognize lines with caps other than joins, so it simplifies those lines when it encounters them.

The module also imports PostScript Type 1 fonts, but without kerning information and at somewhat the wrong aspect ratio. The Stylus representatives—who were very helpful in answering technical-support questions—said that the developers were working on solving these problems.

The differences between ProVector's and Pro ►

Draw's PostScript support becomes apparent when you try to import a Pro Draw PostScript print file into ProVector. Pro Draw's PostScript file can address only 100 steps of gradation, while ProVector can address PostScript's full 256 steps. For example, if you want a light-blue sky gradation as a background, Pro Draw will show visible steps in it, while ProVector will not. Before saving the PostScript (or Encapsulated PostScript) file from Pro Draw, you should convert all lines to Filled/No-Line-Weight objects; you can reset the line weights and colors after you import the file into ProVector.

So using ProVector with PSImport, you can access the art created by Professional Draw and all of the PostScript clip art available in the Mac and MS-DOS markets. Just be sure, when you are using small text and detailed illustrations, to use the fast floating-point-math version of ProVector for greater accuracy. Also, note that ProVector 2.1 lacks the ability to describe the screen density and angle for Linotronic black-and-white prints.

Overall, Professional Draw 3.0 rates an A+ for its drawing ability, but gets poor marks for communication because it cannot read PostScript files. In the same vein, Gold Disk is not helping to open channels of communication by releasing an MS-DOS Professional Draw that cannot read the files from its Amiga cousin.

If you want to import PostScript clip art into a desktop-publishing program, ProVector 2.1 and PSImport is certainly the combination for you. While I have criticized some of its drawing procedures, ProVector applies good, innovative ideas to structured drawing.

—Jim Silks

A2386SX Bridgeboard

Commodore Business Machines, $959.

A2000, A3000/A3000T.	**2.0 compatible.**
Internal IBM slot.	**Minimum system: 1MB of RAM.**
Installation: moderate.	**Recommended system: 1+MB of RAM.**
Hard-drive installable software.	
Not copy protected.	

Emulates an IBM 2386SX; runs MS-DOS and Windows software.

When the Amiga 2000 was released in 1987, Commodore supplied PC compatibility via an internal board that "bridged" the machine's Amiga-only and PC-only slots. The first Bridgeboard provided a 4.77-MHz XT-compatible PC. The A2286 Bridgeboard upped the ante with an 8-MHz AT-compatible connection to the PC world. Commodore's latest offering, the A2386SX, propels the Bridgeboard squarely into the 90s.

Rev It Up

The A2386SX, which is available in either a 16- or 20-MHz configuration, provides you with the power to use the plethora of IBM-compatible software currently available. Included on the board is a socket for an optional 80387SX math coprocessor; one megabyte of RAM (with room to expand to eight megs); a battery-backed-up real-time clock and calendar; the ability to use your existing Amiga drives simultaneously with both AmigaDOS and MS-DOS; an external connection for attaching a standard Amiga external disk drive for the Bridgeboard's exclusive use; a speaker; and a four-pin DIN connector that the manual states can be used for future external control options.

Software is the fuel that makes the A2386SX fly. The board ►

comes with MS-DOS 5.0 (including a manual) and version 2.0 of the Janus software. Janus emulates the PC keyboard on the Amiga; allows the Bridgeboard to access a printer connected to the Amiga's parallel port; utilizes a standard Amiga monitor to create PC MDA mono or CGA color video displays in an AmigaDOS window; creates a "virtual" PC hard drive on an Amiga hard disk or allows access to up to seven Amiga partitions on a PC hard disk; uses the Amiga mouse with PC programs; and copies files between the PC and Amiga. Janus 2.0, compatible with both AmigaDOS 1.3 and 2.0, adds Amiga software to share an Amiga printer connected to the serial port and the "flipper" software needed to share an Amiga disk drive with the PC.

The Bridgeboard installation should not be difficult if you feel comfortable putting internal expansion boards in your Amiga. While the manual contains excellent instructions for installing the board in the Amiga 2000, 3000, or 3000T, it cautions that your warranty is voided unless an authorized Commodore dealer/service center performs the installation.

I had no difficulty installing the A2386SX. The first step was to decide the types of disk drives I wanted to use. I opted to share the Amiga's df1: drive and set the A2386SX's jumpers accordingly. I next installed the supplied cable between df1: and the A2386SX and inserted the board in my A2000's first three-slot bridge connector. An important design difference between the A2386SX and the A2286 AT bridge is that the former has no daughterboard. Where the A2286's daughterboard covered the adjacent slot, the A2386SX leaves it free for use.

Installing the Janus software and creating a virtual PC hard disk on my Amiga hard drive was even easier. Janus 2.0 uses the new Commodore installer to copy all of the required files to their proper spots on the Amiga boot disk. If you want a virtual hard drive, the installer asks you for the desired size and then automatically creates it. This is a significant improvement over the previous version of Janus, which required you to perform the installation manually. Janus 2.0 also uses an improved PCPrefs to configure the PC video display, turn the PC speaker on or off, and configure the PC disk drives.

Getting the PC side of the house up and running was also a snap. The first time you use the A2386SX, you need to establish the PC configuration using the built-in set-up utility, which configures the A2386SX's clock/calendar, disk drives, video, speed, and memory. After you've established the board's configuration, you reboot the PC and insert the MS-DOS install disk. MS-DOS 5.0 automatically looks at your configuration, formats the hard drive and installs itself on the newly formatted drive.

Operation Normal

The A2386SX is one speedy little PC! Commodore supplied a 20-MHz version of the board for testing. According to Norton Utilities' SI program, a leading benchmark for testing PC speed, the A2386SX ran at 21.4 times the speed of an IBM XT. For comparison, I ran SI on an IBM 386SX clone running at 16 MHz. SI rated the clone at a 17.6.

I noticed a speed lag on the A2386SX only when using the Amiga's video to emulate a CGA color PC screen. This is understandable, because the video is passed from the PC to the Amiga. The problem was completely solved by adding an inexpensive VGA card to one of my Amiga's PC slots and connecting a multisync monitor. With the advent of Windows-based software, a VGA adapter is nearly a necessity with the Bridge- ►

Win an Amiga 4000

ART *expression*

Introducing Art Expression, the Amiga Illustrator

Art Expression is the most powerful drawing program ever designed for the Amiga. It allows you to warp and distort text like never before. You can run text around a curve, warp it inside shapes and edit it in any way. Art Expression even has color blends and shape metamorphosis!

Rotate, Skew, Blend, Stretch, Fill and Edit. Text and objects are completely under your control so you can create whatever you imagine. Change colors, edit character shapes, create transparent holes, and transform objects. Art Expression has the most sophisticated drawing and editing tools of any Amiga drawing program.



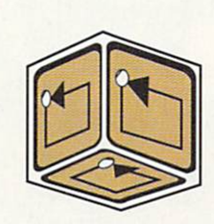




Compatibility

Art Expression can use any of the thousands of available PostScript Type 1 fonts. You can load and edit IFF DR2D, Aegis and Adobe Illustrator files for compatibility with Amiga, Mac and PC standards. Save your illustrations in DR2D or PostScript for use with PageStream, Sign Engine, ProVector and other programs.







More Value Out of the Box

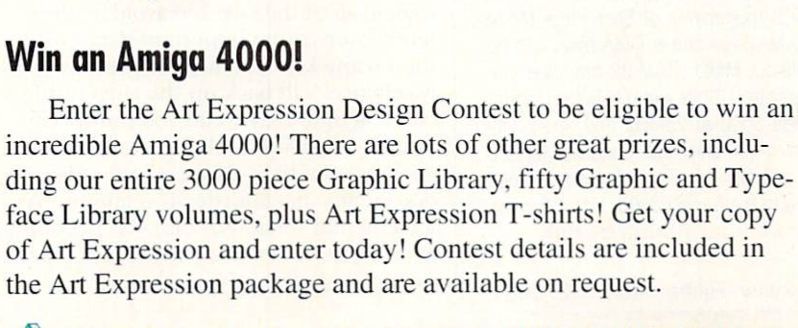
You get a lot of value when you buy Art Expression. Not only do you get the leading Amiga illustrator, you also get BME *trace* at no extra charge. BME allows you to touchup and crop pictures, and to convert your bitmap pictures to jaggy-free structured drawings automatically. You also get 35 PostScript fonts and two illustrated manuals with a "cookbook" of examples. And when you send in your registration card, we'll mail you a disk of more free PostScript fonts and clip art!







Win an Amiga 4000!



Enter the Art Expression Design Contest to be eligible to win an incredible Amiga 4000! There are lots of other great prizes, including our entire 3000 piece Graphic Library, fifty Graphic and Typeface Library volumes, plus Art Expression T-shirts! Get your copy of Art Expression and enter today! Contest details are included in the Art Expression package and are available on request.

Only $249.95

PowerUp from any version of Professional Draw, ProVector, Expert Draw or PageStream for only $125 until Dec. 31, 1992. Call for details.

Art Expression Design Contest ends April 30, 1993.



Circle 46 on Reader Service card.

board. The addition of a VGA card also solved a bug in Janus 2.0's color display that causes the window to resize to a half screen every time a program changes graphics modes. (Commodore reports it is working on a less expensive solution to this problem.)

I tested a variety of PC software, including WordPerfect 5.1, Microsoft's Flight Simulator, Microsoft Excel, and the PC version of Electronic Arts' DeluxePaint, as well as Windows 3.0. I was unable to test Windows 3.1 without a PC-compatible high-density drive, because Microsoft was unable to furnish a version on 720K disks in time to complete this review. However, another A2386SX user with a high-density drive reports he is running Windows 3.1 without difficulty.

If you're looking to add PC compatibility to your Amiga's many talents, the A2386SX is a stellar performer. At a list price of $959, however, the Bridgeboard competes with a complete IBM PC 386SX-compatible system bundled with a VGA monitor and hard drive. Unless desk space is truly critical, a complete 386SX-compatible system might be a wiser investment.

—Bob Eller

EXCELLENCE! 3.0

Micro-Systems Software, $99.95.

Hard-drive installable.
Not copy protected.
2.0 compatible.
Accelerator compatible.
Minimum system: 1MB RAM.
Recommended system: 1MB RAM, hard drive.

Heavy-duty word processing; simple page layout.

KINDWORDS 3

The Disc Company, $124.95

Hard-drive installable.
Not copy protected.
2.0 compatible.
Accelerator compatible.
Minimum system: 1MB RAM.
Recommended system: 1MB RAM, hard drive.

Entry-level word processing.

One of the Amiga's oldest word processors, excellence! has never really lived up to its name—until now. Version 3.0 may have finally reached world-class status, at least among Amiga software. Another recent update, Kindwords 3.0, has not aged as well.

EXCELLENCE! 3.0: A NEW STANDARD?

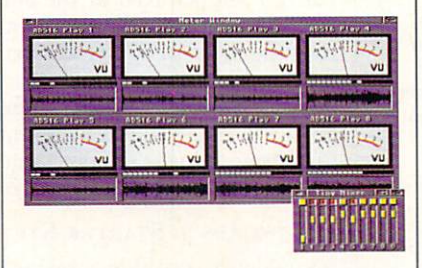
Sporting a new 2.0 look (even under Workbench 1.3), excellence! is an attractive program. It opens a full-featured but conservative ruler atop the screen and lets you toggle many display options, such as margins, paragraph markers, and the ruler. You configure its resolution from the Preferences requester. excellence! even has built-in support for virtual memory, so if you have a hard drive, you can work on files greater than your available memory would normally permit.

Timed saves, one of the more significant features added to version 3.0, are handled elegantly. Besides specifying a time interval for excellence! to save your work, you can also tell it to warn you of an impending save by beeping. If you want to abort the save and avoid inadvertently overwriting important data, press the Escape key. As a further precaution, excellence! will back up the current file before a timed save, and you can specify as many back-up levels as you like. Now you can even have an audit trail of large documents that effortlessly retains every incremental version in case you need to go back to something written and "discarded" a week ago! ►

16 Bit Desktop Audio

Professional Digital Sound for Your Video, Music, and Radio Productions

Finally, true CD quality 16 bit audio is available for your Amiga! SunRize's new AD516 gives you eight tracks, plus a time code reader and a DSP chip. Included with the AD516 is Studio 16™ version 2.0. This new release of our popular 16 bit editing software puts a complete sound studio on your desk!



AD516

The AD516 hardware provides stereo in/out connectors, plus a SMPTE in. Just plug your VTR, CD player, radio, tape deck, or other audio source directly in. Then record in stereo, direct to hard disk, with 16 bits at sampling rates up to 48,000 samples per second. Plus, the AD516's efficient design allows 8 track playback direct from hard disk. The AD516 can synchronize and chase SMPTE time code at 24, 25, 29.97, and 30 fps (drop or non-drop frame). Designed to exceptional audio standards, the AD516 offers 15Hz to 22KHz frequency response and 85dB dynamic range.

Video Production

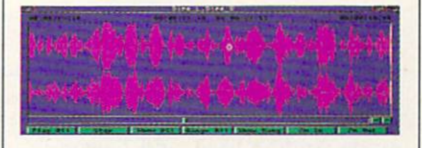
The Video Toaster goes a long way towards solving your video problems. But what about sound? Do you want to do ADR or voice-overs? Do you need to synchronize background music with your productions? How do you add footsteps, door knocks, and other sound effects to your video or animation? Do you need to fade, cross fade, or eliminate sections of audio? Can you edit your audio, or are you stuck with the first take? Studio 16 solves all these problems by turning your Amiga into a complete sound studio. With Studio 16's cue list and SMPTE support you can lock sounds frame accurately with your video. Audio triggers reliably, at the same spot, every time. Or you can slip your audio effects, trying them at different spots. And since Studio 16 plays directly off hard disk, the number of sounds you can trigger is unlimited.

Mixer and Meters

Each of Studio 16's eight tracks can be metered and mixed. Unlike two track systems, Studio 16 can combine multiple tracks with no generation loss. And it can record two tracks while playing up to eight!

Waveform Editor

The Studio 16 sound editor graphs the audio waveform and allows you to cut, copy, and paste audio. Up to eight samples



can be edited per window. And edits can be non-destructive or permanent. Zoom, scale, fade, reverse, echo, normalize, loop FFT, resample, and many other functions are available. Named regions can be defined and used in the cue list or transport modules.



DSP Supercharger

The AD516 includes a special sound coprocessor - the advanced 2105 DSP. The DSP allows Studio 16 to handle those eight tracks while performing real time mixing. The DSP can also do high quality 16 bit effects such as echo, flange, delay and chorus.

Low Prices, High Performance



Studio 16 2.0 comes with either the AD516 (16 bit, 8 track, stereo, $1495 list) or the AD1012 (12 bit, 4 track, mono, $595 list). Also available is the DD524 digital I/O card for direct interface to DAT. **Call today for a free Studio 16 information packet. Tel: (408)374-4962. Fax: (408)374-4963.**

SunRize
INDUSTRIES
2959 S. Winchester Blvd., Suite 204
Campbell, CA 95008 USA

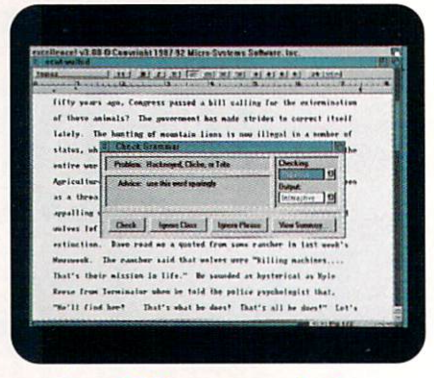
European Representatives: **FINLAND** Power Computers +358 (18) 781 8992. **FRANCE** Storm +33 (1) 43 57 46 57. **GERMANY** AS&S +49 (069) 5 48 81 30. **ITALY** AP&S +39 (0432) 759264. **SPAIN** PiXeLSOFT +34 (088) 71 27 00. **SWEDEN** DisplayData +46 (0457) 503 80. **SWITZERLAND** Microtron +41 (032) 872429. **UNITED KINGDOM** HB Marketing +44 (0753) 686000.

Circle 57 on Reader Service card.

The program is chock full of other new features, as well. Bookmarks, a handy addition, are the electronic equivalent of paper scraps to tuck between important pages in a large document for easy location. As for page-layout options, what modern word processor would be complete without multiple columns? excellence! allows up to eight. It also includes a generously large dictionary and thesaurus—not to mention a grammar checker. (This review clocks in at an 11th-grade reading level, and I seem to use fewer sentences in the passive voice than typical life-insurance policies.) When you're ready to print, you can even see what you are about to get with a page-preview function.

One particularly nice feature is the ability to work on a file with requesters open. Usually, the spell checker or find/replace requester locks you out of the word processor itself; in excellence!, you can continue to edit the current document while it is on screen.

One of the best reasons to buy excellence!, however, is its ability to quickly and easily generate an automatic table of contents and index. This invaluable function was previously available only



excellence! 3.0's grammar checker provides interactive output.

Kindwords 3 offers a large toolbox for common commands.

in Amiga WordPerfect, an undesirable choice for many word-processing tasks. excellence! is about as full-featured and intuitive as you are likely to see on this side of AmigaDOS. It even includes extensive macro support with ARexx and an easy-to-use "Glossary" (a user stockpile of macro commands).

In a nutshell, excellence! does just about everything you might want or expect in a word processor. It doesn't do everything perfectly, however. It cannot change the case of words with a keystroke. Its Insert Literal function is marginal. It doesn't show you what the actual characters are in a given font,but only what they would be in the standard character set—not terribly useful for finding the penguin shape in your Symbols font. Lastly, I felt betrayed by the box, which proudly proclaimed "ASL Compatible Font/File Requesters." It turns out that excellence! doesn't actually use the ASL library at all. Instead, MSS has inexplicably provided ASL look-alikes, preventing you from using a single, standard requester in all your Workbench 2.0 software.

KINDWORDS 3: STARTER KIT

It would take very little tweaking to make excellence! the finest electronic typewrit-

Continued on p. 72.



Meet the future of computing: Commodore's new 68040-based computer that features a new processor, a new DOS, and a dynamic new chip set. Prepare to expand your horizons with the exciting graphics potential of this colorful machine.

The Amiga 4000

BY LOU WALLACE

FOR SEVERAL YEARS, Amiga users and developers have been clamoring for a major upgrade to the Amiga custom chips. During this time, the Mac and MS-DOS systems equaled, and then surpassed, the Amiga's graphic-display system in terms of both resolution and number of colors.

Because of the increased emphasis on multimedia and desktop video, the Amiga's screen size, number of colors and total palette became limiting factors. Although third-party developers have filled the void with sophisticated 24-bit display cards, this hardware is aimed mostly at static displays, is basically unsupported by the Amiga's operating system, and has had little impact on most of us in our day-to-day applications.

It has become evident that change is needed. And I'm pleased to say that this fall a real change is coming to the Amiga. The first sign of this renaissance is an entirely new machine, the Amiga 4000! The first public demonstration of the A4000 was scheduled last month for the World of Commodore show in Pasadena.

The A4000 is the most significant upgrade to come out of Commodore. It boasts many additions and changes, the most significant of which concerns its graphic display. The A4000 is the first of a new line of Amigas to incorporate the AA (Advanced Architecture) graphic chip set, which immensely expands the Amiga's graphic potential. The AA (called "Double A") chips are Alice, Lisa, and Paula. While Paula is essentially unchanged, the other two are full replacements for the Agnus and Denise chips.

A4000 Specifics

The A4000 is the first in a new line of Amiga computers to take advantage of these new chips. It is also the first Amiga to be based on the 68040 processor. Interestingly, there is no CPU on the motherboard. Instead, the A4000 CPU resides on a plug-in card that installs in the 200-pin processor slot. This approach means that the 32-bit A4000 is completely configurable—at the dealer level.

While the initial version is a 25-MHz 68040, as other processor cards become available, you will be able to buy (or upgrade to) faster 68040s, custom CPUs, or even future high-performance processors like the 68060.

Internally, the A4000 has four Amiga Zorro II/III slots as well as three PC/AT slots. As with earlier models, though, using some PC slots precludes using other slots for Amiga cards. As in the A3000, the video slot is in line with one of the Amiga slots. This arrangement will encourage development of specialty video cards (much like Great Valley Products' IV24 multimedia/ video package).

The CPU case is a bit larger than that of the A3000, but not as big as the A2000's. There is room inside for two floppy drives and two hard disks; an external floppy connector is available for more drives. In addition, the front drive bay can accommodate a 5.25-inch disk device, allowing you to mount large internal hard drives, CD-ROMs, or other removable media.

A 120MB IDE hard disk is standard. For those who want access to SCSI devices, an optional 32-bit SCSI-II controller card will be available. Interestingly, the included floppy drive is a high-density 3.5-inch unit that can read and write in either 880K or 1.7MB modes, and can read and write to standard MS-DOS formatted disks.

Like the A3000, memory expansion in the A4000 allows a total of 18MB on the motherboard—two megs of chip and 16 megs of 32-bit RAM. You can add more via plug-in cards. The base configuration of the A4000 includes 2MB of chip RAM and 4MB of 32-bit RAM, although this is subject to change.

AmigaDOS 3.0

These hardware improvements and additions require new software to take advantage of them. Not surprisingly, the operating system shipped with the A4000 is a new release called AmigaDOS 3.0. It is an enhanced version of the 2.1 OS, introduced on the Amiga 600, and it includes all the 2.1 features, plus support for the AA chips and their new color and screen-resolution features.

New to OS 2.1/3.0 is the addition of CrossDOS, a program by Consultron that lets you easily read and write data between Amiga and MS-DOS disks. Printer Preferences now supports PostScript directly, and new printer drivers have been added. A Sound Preferences editor lets you customize your system with the sound effects of your choice. Also, a Local Preference editor lets you tell the system what language to use in its messages and text displays (use the language library of your choice). This feature should bolster the international appeal of the Amiga. (*AmigaWorld* will address new operating-system features further in future issues.)

Commodore says that AmigaDOS 3.0 will, for the time being, be limited to the A4000 and other AA machines. That's reasonable, as the unique features of 3.0 are designed to take advantage of the new chip set. AmigaDOS 2.1, however, is another story. Any Amiga that can use the 2.04 version can take advantage of 2.1. Look for an upgrade path at some future date, as yet unspecified by Commodore.

Over the Rainbow

With the AA chips, you can forget about yesterday's 4096 color palette. These chips feature a full 24-bit palette, which gives you access to any of 16,777,216 colors for use in your screens. The total number of colors on screen will depend on how many bitplanes you use and on the display mode. You can create screens using one to eight bitplanes, which translates into two to 256 colors at once. Most importantly, there is no limit on the number of colors you can use in the various screen resolutions.

While current Amigas allow up to 32 colors in low resolution, 16 colors in high resolution, and four colors in Productivity and SuperHires modes, the AA chips have no such limitations. With eight bitplanes, every screen can use up to 256 different colors, a fact that you will appreciate even more when we discuss how many new displays and resolutions are available.

For those who think 256 colors are not enough for ►

PHOTOGRAPHED BY EDWARD JUDICE

some applications, the AA chips have yet another color surprise in store. Remember how the Amiga's HAM (Hold And Modify) mode was able to create stunning low-resolution images using all 4096 colors with the older chips? Well, the new chips have their own eight-bit HAM display mode, which lets you create images that use over 256,000 colors simultaneously.

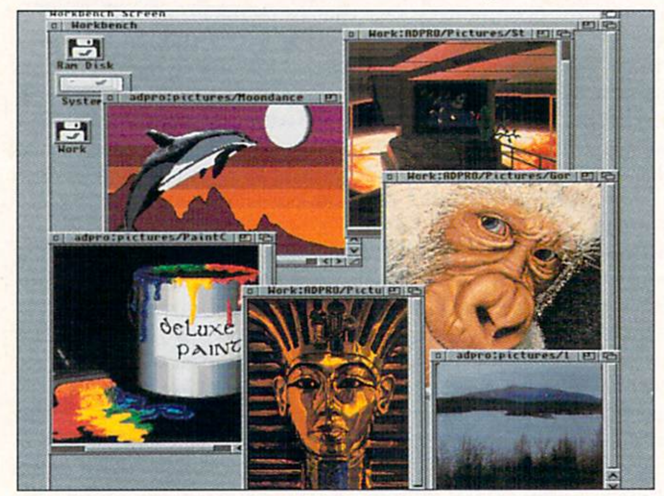
The AA HAM mode has 64 base colors instead of the 16 available in the earlier HAM displays. This means that software can minimize the fringing that often accompanies HAM displays. And, as with the standard color modes, you can use AA HAM mode with any screen, regardless of resolution.

Imagine a 640×480 display with 256,000 colors! Sounds impressive, doesn't it? Now try imagining 640×960, or 800×600 or 1280×400 with that many colors! Then add overscan. Are you excited yet?

Exotic Resolutions

The A4000's AA chips offer all the standard Amiga NTSC and PAL screen sizes that the original and later ECS chips support. These include the original displays of 320×200, 320×400, 640×200, and 640×400 with or without overscan. Also included are the ECS 640×480 and 640×960 Productivity mode and 1280×200 and 1280×400 SuperHires modes. AA chips go even further with their Super72 modes, including a very nice 800×600 display. And, these resolutions do not include the extra display area you get when you use overscan modes.

In fact, Commodore engineers are now defining even more screen resolutions. These new chips are programmable: You can vary the horizontal and vertical screen sizes in a great variety of ways, so many more exotic displays are not only possible but very likely. And keep in mind that all screens can support up to 256 colors (out of 16.7 million), as well as the phenomenal AA HAM displays of 256,000 colors. The possibilities for artists, animators, multimedia producers, and desktop videographers are monumental, especially when you consider that all these features will now be standard on the A4000 and all future Amigas.



The AA chips are used here to display multiple 32-color IFF images.

Behind the Scenes

One feature that enables these new chips to create such graphics is the bandwidth of the chips. Bandwidth measures how fast information can be processed, and the new AA chips have a fourfold increase in bandwidth over their predecessors. This increase does much more than give you improved color resolution; it improves the performance of the graphics as well.

Regardless of what processor you have, when you open a 16-color, overscan, hi-res interlaced screen in your existing Amiga, your overall system performance will degrade because so many of the Amiga's CPU cycles are required to support this display. Thanks to the AA chips' increased bandwidth, however, such a display performs as well on the A4000 as a two-color display: It is fast and effective rather than sluggish and futile. Of course, even with the new chips, using the maximum resolution along with the maximum number of colors will cause a performance hit—but one not nearly as pronounced as with the older chip set.

Sprites benefit from the extra bandwidth. The new system allows sprites that are 16, 32, or 64 bits wide. (The previous chips only allowed 16-bit-wide sprites.) Game developers will be able to use these very large, very fast sprites instead of slower bitmap objects. also, sprites (such as your pointer) can be set to various resolutions, independent of the screen resolution.

One chip missing from Commodore's newest machine is the A3000 display enhancer, which creates a non-interlaced, flicker-free display. Because of the increased bandwidth and programmability of the chips, software can define a deinterlaced, flicker-free screen, provided you use a multisync monitor. Examples of these modes are the Productivity 640×480 and Super72 800×600 displays.

Bandwidth is not the only factor that contributes to the chips' speed. Another important A4000 component is 32-bit access to chip memory, instead of the 16-bit access of earlier chips. This means that the processor can read and write data to chip RAM twice as fast. Another feature of the system architecture, 32-bit page-mode access, also means faster access to RAM.

Where Do We Go From Here?

Will you be able to upgrade your existing Amiga to the AA chips? The quick answer is no. AA chips are 32-bit wide and not pin compatible with the earlier Amiga chip sets. One possibility—which Commodore neither confirms nor denies—is a motherboard upgrade. This would require you to purchase and install a completely new motherboard, designed for AA. While this is possible for the A3000 (which is a 32-bit system), it is a much more difficult proposition for A2000s, A600s, and A500s. Even if it does become available, though, a drawback to the motherboard option is cost. Motherboard replacement is often expensive enough to justify a new system. This will be an even bigger consideration if other, less expensive AA machines appear.

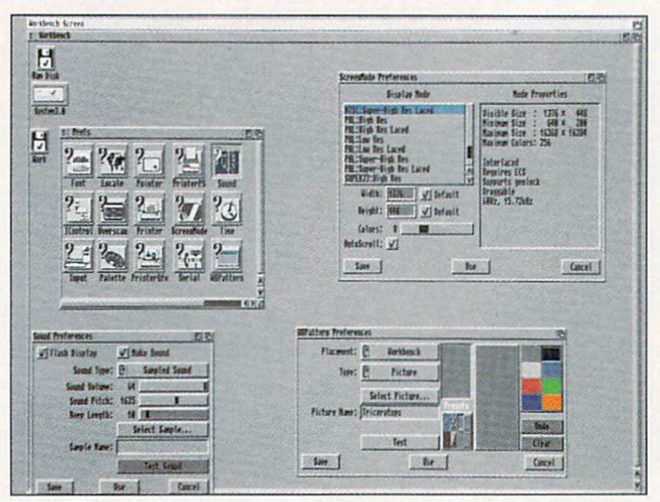
There is, however, another force in the market that can make such an upgrade feasible. That is the ever-creative third-party companies that often provide solutions to "impossible" situations. I have no inside information about such upgrade scenarios, but experience leads me to expect them.

Impressions

One difficulty Amiga industry professionals have had ►

to endure is knowing about Commodore's plans, but being restrained from talking about them. This has been especially problematic lately, in the face of much speculation and commentary concerning a lack of development for the Amiga line. I'm happy to report that there is much new technology coming from Commodore, and *AmigaWorld* will continue to bring that news to you as soon as we can.

I am impressed with the AA chip set and am eager to start using an A4000. The new displays will be a boon to artists, multimedia producers, and desktop videographers, and game developers should have a field day with the color, speed and resolution Double A provides. So will the rest of us! ■



Some new Preferences tools displayed in 256-color SuperHires.

A4000 Specifications

- 25-MHz 68040 CPU
- Base machine includes 2MB chip RAM and 4MB 32-bit RAM
- Up to 18MB RAM on motherboard; additional RAM via RAM cards (to 1.7GB)
- Upgradable CPU via 200-pin slot
- 120MB IDE hard disk
- 880KB/1.7MB internal floppy
- Supports four internal disk drives (two floppies and two hard drives)
- Four ZORRO II/III expansion slots
- Three PC/AT expansion slots
- Video-expansion slot
- Full 32-bit system architecture
- 16.8-million color palette
- Up to 256 simultaneous colors, plus 256,000 colors using HAM display mode
- Advanced Architecture (AA) Graphic Chip Set (Alice, Lisa and Paula)
- Programmable display resolutions include 640×480, 640×960, 1280×400 and 800×600
- Video overscan modes supported
- All color modes available in all display resolutions
- Flicker-free interlaced modes
- AA chip set backward compatible with earlier ESC chip set
- Price: $3699

Applications for AA

As you might expect, Commodore has been keeping developers informed of these hardware changes, and quite a few have been developing products to take advantage of the new features. While many were not willing to "pre-announce" their work, others were far enough along that they felt comfortable discussing their new AA products. *(To locate vendors of the products mentioned, see the "Manufacturers'/Distributors' Addresses" list on p.104.)*

INOVAtronics is upgrading its **CanDo** multimedia application language and **Directory Opus** file manager to support AA machines. The firm also promises a new, high-powered text editor, as yet unnamed.

Scala tells us it will fully support the AA chips in **Scala Multimedia 2.0** (scheduled to ship this fall), a greatly enhanced version of the existing Scala presentation software. Included with the package is a utility to create animations using the new eight-bit HAM modes, which Scala can play.

New Horizons was scheduled to release **ProWrite 3.3** at last month's World of Amiga show. This update will fully support all screen resolutions as well as graphics with up to 256 colors. A new version of **DesignWorks**, scheduled for a Christmas release, will also support the AA chips. New Horizons also states that its other packages, such as **Quarterback**, **QuickWrite** and **Flow**, will work with AA, although by the nature of their tasks they do not require the extra color.

Impulse plans a free upgrade for any registered **Imagine 2.0** owner with an AA-chip machine. This new version will support the extra modes and resolutions. If you plan to get an A4000 and have not already registered your copy of Imagine, it is time to do so.

Octree, publisher of Caligari 3-D products, is also jumping on the AA bandwagon with **Caligari 24**, an upgrade to Caligari 2. Octree is excited by the new hi-res, eight-bit HAM mode, which it thinks will satisfy users who really do not want or need a full 24-bit framebuffer.

ASDG's **ADPro** image processor and **FRED** (FRame EDitor) animation utility already support AA. I used ADPro to process 24-bit images into both 256 color and eight-bit HAM displays. and was surprised to find that it would already open the new screens and display the images it created. ASDG's **Morph Plus** will also offer features based on AmigaDOS 3.0.

Digital Creations' 24-bit paint-and-animation package, **Brilliance** (scheduled to ship in late October), uses every display mode your system can generate, including AA modes.

Soft-Logik's **PageStream** is already designed to work in the 256-color mode as long as you open it on the Workbench. The company plans further enhancements to take advantage of other AmigaDOS 3.0 features.

Gold Disk is upgrading **Professional Page** and **Professional Draw** to take advantage of the new color modes. The next release of Professional Page is scheduled for later this year; a Professional Draw update will follow.

Electronic Arts' **DeluxePaint IV 4.5**, which is expected this fall, will have full AA chip support. A **Deluxe Music Construction Set** update, scheduled for release in early winter, will also be compatible with the new system. □

PIECE NEGOTIATIONS

CREATING A COMPOSITE IMAGE

Where disparate images meet, an interesting collage can result. Not, however, without some finessing. Here are some techniques you can use to negotiate a successful work—piece by piece.

By Steven Blaize

A COLLAGE IS an artistic medium used by professional artists and grade-school kids alike. The hard-copy approach involves cutting and pasting various pieces—pictures and other materials—to create an entirely new composition. The digital approach involves combining images from various sources on screen.

Whether you create your collages by hand or by computer, you must carefully select each element so the final composition is a new work of art. The concept behind any good design is to convey your message to the intended audience. This is true whether your design is for business, television, art, or feature film.

Although the selection of pieces is specific to each project, I can offer pointers and assembly tips that can help you time and time again. The examples I use to illustrate this article are intended for video, but the techniques work equally well for animation and print. Also, while my primary tools for cre- ►

ating collages are ASDG's Art Department Professional (ADPro), Digital Creations' DCTV, and Impulse's Light24, you can apply these same ideas to whatever programs you use.

Picking Up the Pieces

Before beginning to assemble a collage on screen, you need a source for your digital art. You can use any paint, draw, or 3-D rendering program to create original art. You can also employ clip-art disks, the purchase of which generally gives you license to use the included images. If you have a framegrabber or still digitizer, you can capture images from video, live sources, or static pictures. In digitizing, keep copyright in mind; there has been no clear definition of the impact of digital composition and changes to copyrighted imagery. So be careful: If you are digitizing a published piece of art or video, you should get permission to use it.

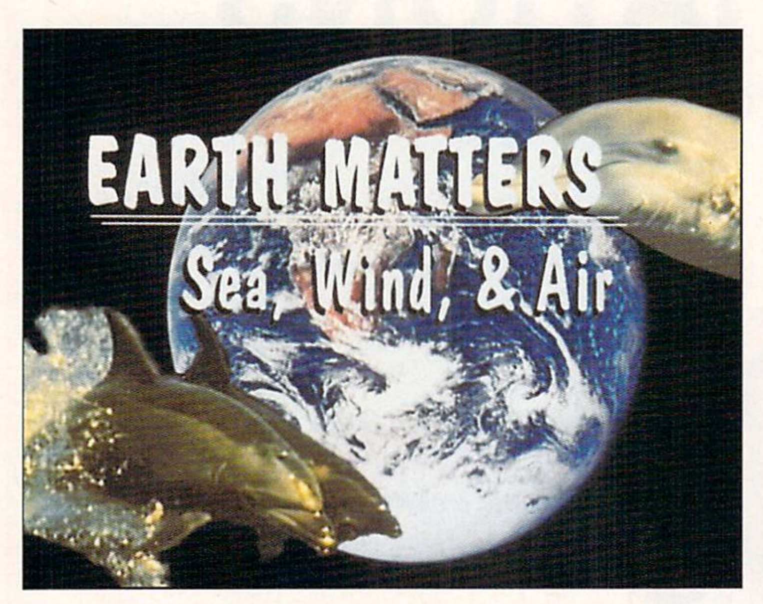


Figure 1. This composition is derived, in part, from the images in Figure 2.

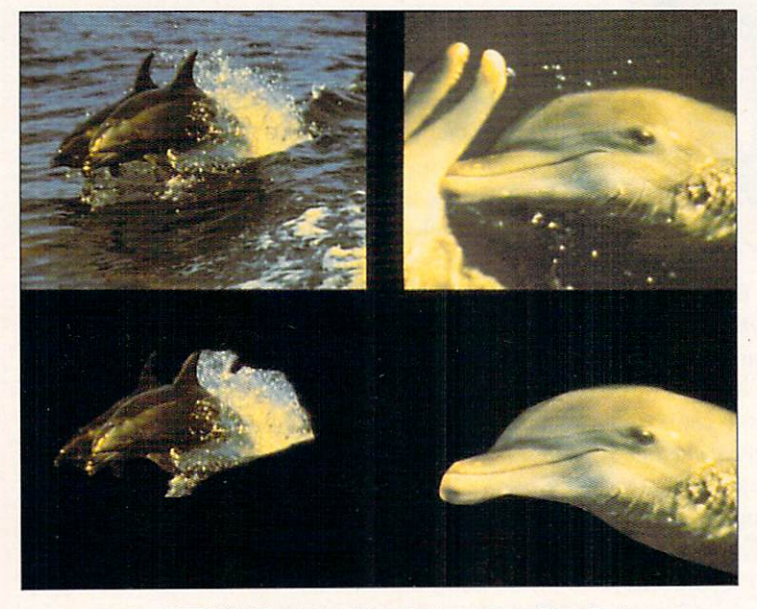


Figure 2. The DCTV-digitized dolphins, before stenciling (top) and after.

Once you have collected all the pieces you want to include, you are ready to start cutting and pasting. Paint programs such as Light24, Toaster Paint (NewTek), MacroPaint (Lake Forest Logic/GVP) and DCTV Paint allow you to work with images in 16.7 million colors (24-bit), but require display hardware to provide this color accuracy on the Amiga. (Each of these programs comes packaged with the appropriate hardware.)

You really do not need special display hardware, however, in order to create 24-bit collages. The Art Department Professional and Image Master (Black Belt Systems) are specifically designed for processing images in 24-bit color, but they do not require anything beyond the Amiga's normal display. This is a major benefit, even if your final output will be 16-color or HAM. (While Image Master comes packaged with Black Belt's HAM-E display hardware—which it is especially suited to take advantage of—it is sold separately, as is AD Pro.)

By combining your elements in full (24-bit) color, you can mix multiple pictures, even HAM images, without palette problems. Then you can render your collage in 24-bit or in any of the standard Amiga modes with an optimized color palette. (Native display modes limit you in terms of palette: To combine elements of two images in paint software, both must share the same palette. If the images' palettes are different, you must either convert one image to the other's palette or change both to a third.)

You can also use programs such as Digi-Paint 3 (NewTek), DeluxePaint IV (Electronic Arts), or SpectraColor (Oxxi) to combine Amiga-mode images—that is, images that do not require a special device for uncompromised screen display. I suggest these programs because they provide transparency controls that are very helpful for such things as see-through drop shadows.

Figure 1, which illustrates basic image compositing, served as the opening title to an environmental news segment. I digitized the two dolphin photos using DCTV (see Figure 2) and loaded the clip-art image of the Earth onto the jump screen. Then, with the paint program's stencil features, I cut the dolphins as clips (bottom images), resized them appropriately, and stamped them into position on the jump screen. I saved the result as a 24-bit IFF file.

Although I could have added the text directly in DCTV, I instead created it—along with its near-black drop shadow—on a solid-black background in another program. Keeping the background and text pieces separate allows you to change the text quickly if you later find that necessary.

I then loaded this new picture with the Earth and dolphins into AD Pro. Making sure the Comp button was on, I then composited the IFF and title files, setting RGB values to 0 and Mix to 100. This permitted the black background of the title screen to become totally transparent, while the rest of the image was mixed at 100 percent. (By setting the RGB and Mix levels, you can make any specific color in an image transparent while mixing the rest of the image to any level of transparency.)

Finally, I scaled the entire image down one percent before scaling it back up to the final 736×480. This al-

lowed me to create anti-aliasing around the text without sacrificing image quality.

Masks and Shadows

Paint programs such as DeluxePaint, Light24, and DCTV provide the ability to create stencils to protect areas of your image from changes. You can then composite other images into your collage over the unprotected areas. You can achieve this same effect through AD Pro by creating a two-color mask. The top-left image in Figure 3 demonstrates this: It shows the entire deco-style design in black and white.

After deciding which parts will be the same color, you can use your paint software's fill tool to create the separate mask files. (The first of the mask files for our example appears in the top-right corner of Figure 3.) You then simply load the background (in this case the marble shown at the lower left) and then composite the mask, making the black transparent. The result is shown in the lower-right corner of the figure.

For this particular image, I used three types of marble for different parts of the design. Then I composited these intermediate files together, with white being transparent. The final image (see p. 35) was placed on a black background for added contrast.

Some of your projects may involve 3-D graphics and animations. The third example includes 3-D text rendered in Imagine (Impulse). Looking at Figure 4, you can see most of the elements that were used to create the final image. The top half shows the image before processing, while the bottom half depicts the processed image. I created the blue background using the ARexx script for embossing that's included with AD Pro on the picture of wicker. I then composited this at a mix of 30 percent over a plain blue backdrop.

You achieve the embossed look by first loading a negative of your image, and then loading the original image one pixel to the right and one pixel down from the negative, with only a 50-percent mix. (It works best if your image is made of various gray levels and has good contrast.) In this manner, you can use your paint programs to create the same type of look.

I created the red rectangles in a paint program and added them next, first with a 30-percent mix and each of the RGB values at 255 (to produce white). Then I shifted the image to the right and down, using the helpful visual indicators in AD Pro's Composition Control screen. This created the transparent drop shadow, which adds depth to the image. I then added the same file at a mix of 100 percent. Finally, I rendered the 3-D text on a black background and added it in the same manner, with a full 100-percent mix and black designated as transparent (see Figure 5).

Those of you who work with 3-D software may wonder why I would composite a rendered 3-D scene over a background rather than use the latter image as a backdrop in the 3-D program. There are two reasons: time and memory. The 3-D software must read the image from disk and load it into RAM before rendering takes place. This consumes significant amounts of both commodities, as an overscan 24-bit background is about 1MB in size. While some of the time saved is lost again during compositing, my experience shows that there is an overall saving.

Furthermore, because the 3-D program may compromise the backdrop during rendering, compositing ensures that the background will be of the very highest quality.

The easiest way to composite fixed backgrounds into an animation sequence is with an ARexx script. ADPro comes with several ARexx scripts that give even novices a good start, and you can use this approach with any ARexx-controllable paint program or image processor that lets you composite images together.

While I do not have space here for an ARexx lesson, I can offer a few pointers. First, create a list of the names of your rendered frames. You can do this easily from the CLI by changing the directory to the location of your images and typing List>filename sort quick. (You can use an editor to remove the extra entries from the list and also to easily rearrange the order of the images.) ►

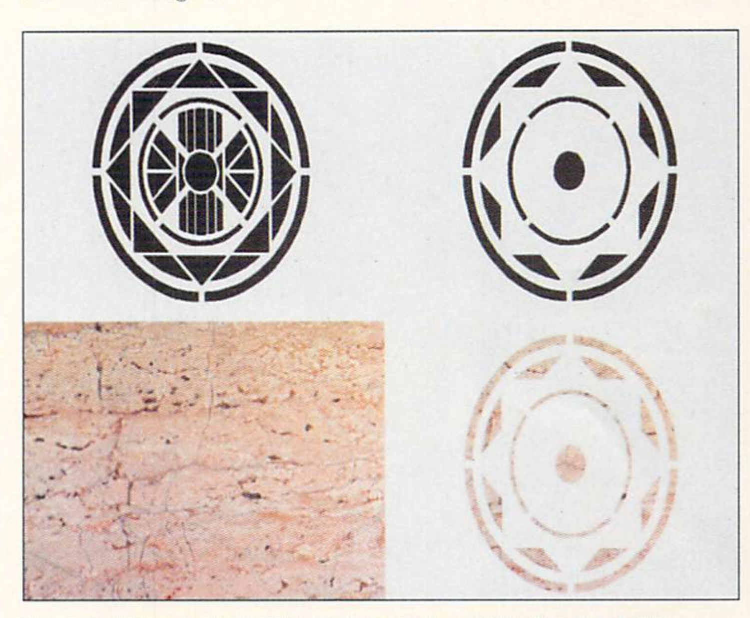


Figure 3. These parts went into the creation of the image on this article's opening page.

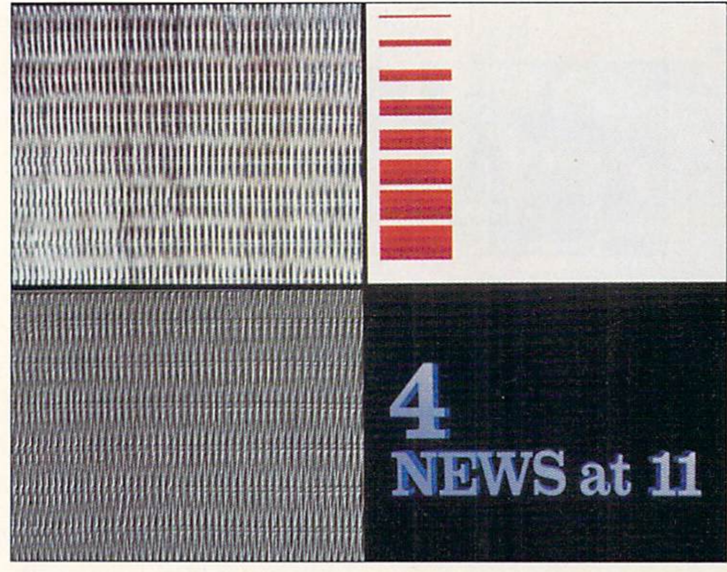


Figure 4. Different dimensions: The 2-D and 3-D elements that combine to make the image in Figure 5.

When writing the ARexx script, use the command for your program that can load your background image (with ADPro, use GetFile). Now create a loop to first load the background file; then load the foreground picture, specifying mix levels and transparent color (ADPro uses parameters after the load command); finally, output the image. With ADPro, you could even save the result to a framebuffer (such as Impulse's FIRECRACKER or GVP's IV24), and then trigger MicroIllusions' Transport Controller to record your images automatically to videotape.

We Do Windows

The last example (see Figure 6) involves a few more steps, but should give you further ideas of what you can easily achieve. All of the original scenic pictures were high-resolution, severe-overscan, 24-bit clip-art images. I created the red, white, and blue borders in DeluxePaint at 772×516 and saved them as a single file. I then loaded this border into AD Pro and, using the Center button with a 100-percent mix, composited each scene into the middle between the borders. I then scaled each scenic image down to one-third of its size and temporarily saved it to disk as an individual file. To form the transparent drop shadows, I also created a plain-black rectangle the same size as the reduced images.

To create the final image, I loaded the marble background and then added the first black rectangle, with a 30-percent mix. Although I positioned the rectangle by eye, I noted the exact starting positions because I knew that the next step involved adding the first small bordered image ten pixels up and to the left of the shadow.

I handled the three other images in the same manner, placing the shadow first and then the scenic. In this way, I was able to have see-through shadows on the marble as well as on the underlying scenics. This approach added depth to the finished picture.

The final touch in this example was to add cut-out titles—instead of standard text—over the images. I created a mask for the title in a draw program where I could easily manipulate the characters. I saved the mask—black characters on a white backgound—as a simple two-color picture. Then I composited it at a 30-percent mix, with the black totally transparent; that created the gauze effect.

Later, I added the outline around the letters using a similar mask. This time, I used RGB values of 1 instead of 0 for the black element—the outline—so that the composited result is not transparent. As in the last example, I used the same scaling technique for better antialiasing.

Regardless of what type of project you are working on, remember to think about your final design before you begin. Collect and arrange your elements carefully, keeping the goal of effective communication in mind. When considering source images, look for unusual ideas—such as the use of wicker for texture in the third example—that can enhance your design. These creative touches can make a great difference.

Finally, be sure to save intermediate files temporarily as you progress. If you change your mind about one of the elements you are including in a multilevel image—such as that in the third example—the intermediate files will save a lot of re-creation time. Besides, saving along the way lets you experiment with various results. And with a little experimentation, the possibilities are endless. ■



Figure 5. 3-D graphics are exceedingly good news in the realm of compositing.

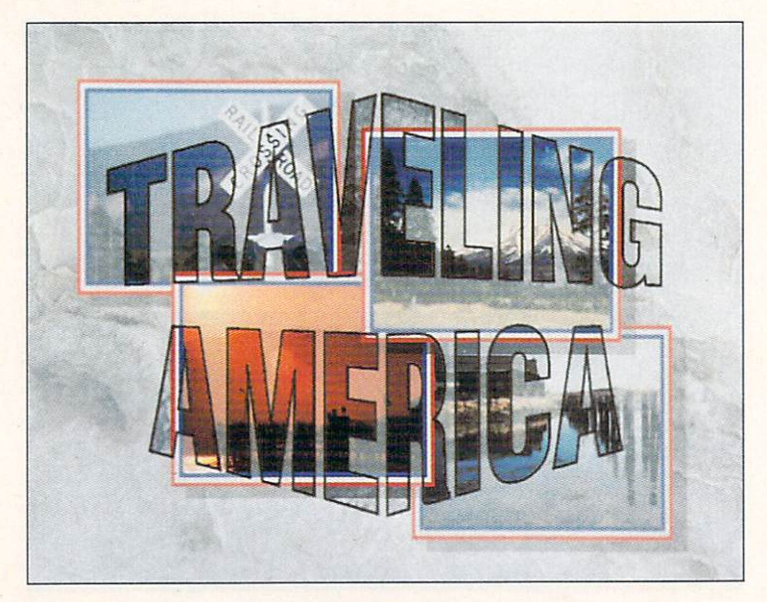
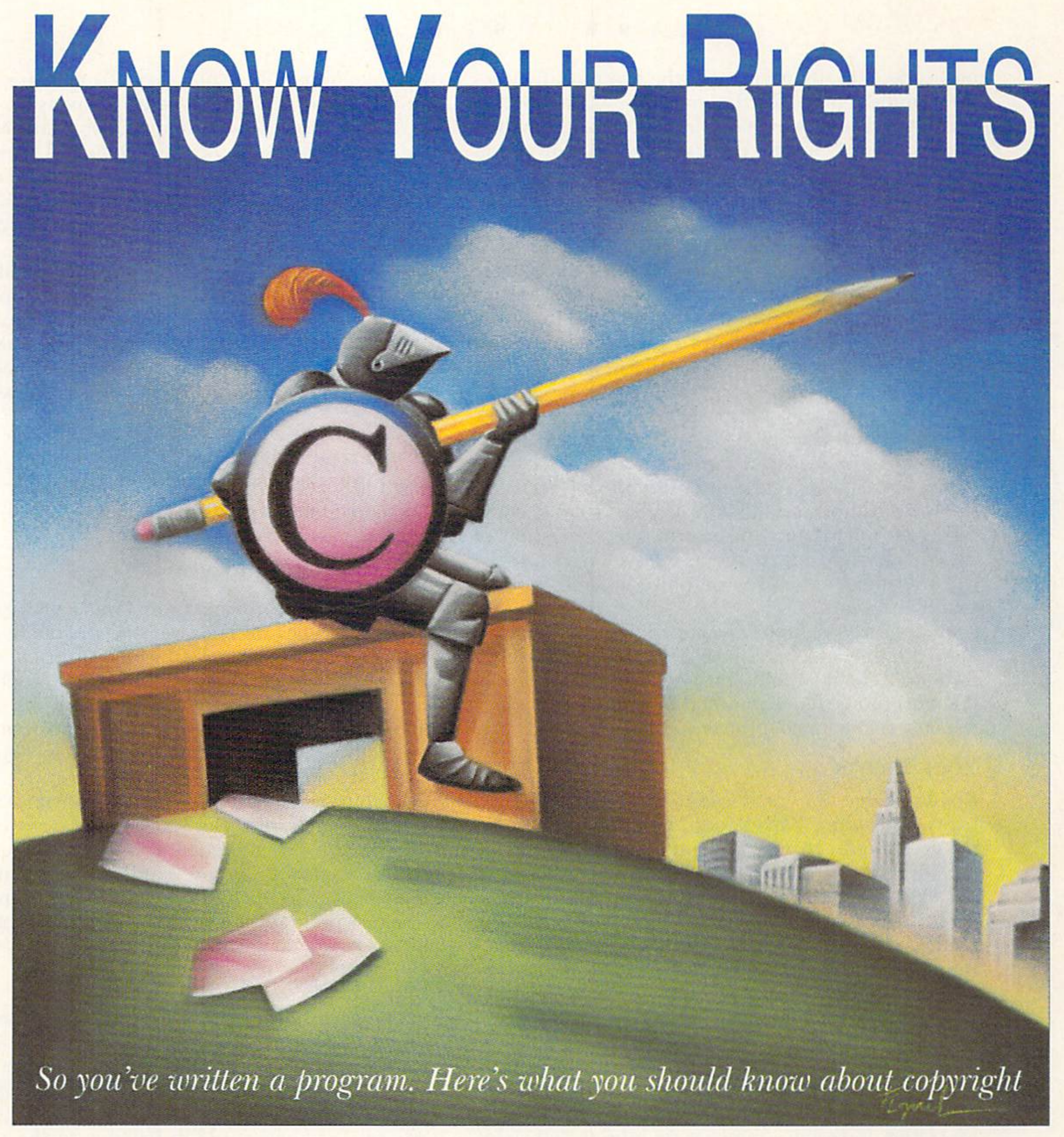


Figure 6. A 30-percent white overlay gives this composite image its gauzy feel.

The Earth Matters image is a derivative composition, with elements from original 1990 copyrighted works of Laurel Canty and Pieter Folkens/Earthviews. Except for the dolphins, all 24-bit images are from Texture City's professional image libraries.

Steven Blaize is owner of Creative Fire, a multimedia presentations company, and co-owner of Texture City, developer of 24-bit backgrounds and textures. He is an author, lecturer, and consultant on Amiga and MS-DOS platforms, as well as the Assistant Director of the Amiga Video-Graphics Guild. Please contact him c/o AmigaWorld *Editorial, 80 Elm St., Peterborough, NH 03458.*

KNOW YOUR RIGHTS



So you've written a program. Here's what you should know about copyright law—whether you intend to sell your work, make it freely distributable, or place it in the public domain.

You've just downloaded a new program from your favorite bulletin-board system and are scanning through its documentation when you come across this paragraph:

This program is (c)1991 by Joe Cool. This program is public domain and may be distributed only for noncommercial purposes.

If you don't know why the above statement is flawed, this article is for you. For now, let's just say that Joe Cool would be in for a surprise if he tried to sue for copyright infringement.

INTELLECTUAL PROPERTY RIGHTS

Most software developers feel a sense of attachment to the software they create, especially if they depend on that software for their livelihood. The computer industry as it is today would not exist were it not for intellectual property rights—a term that includes copyrights and patents.

A patent grants an exclusive monopoly for a limited period of time (the length of protection depends on the country) to the inventor of a new, nonobvious product. In exchange for this monopoly—which allows the inventor to license the product to manufacturers ►

BY ERIC GIGUERE

ILLUSTRATED BY FRED LYNCH

and collect royalty payments—the inventor discloses the complete plans for the invention to the government, which puts the plans on file. Once the patent period expires, anyone can use or sell the invention as he sees fit.

Can software be patented? This question is being hotly debated even as you read this. The US Patent Office has already granted several patents on software and program algorithms. Whether the patents are enforceable will not be known until a few lawsuits have wound their way through the legal system. In any case, obtaining a patent is a time-consuming and expensive operation, so the vast majority of developers depend on copyrights to protect their software.

A copyright grants the creator of an original work of expression—a book, a painting, a sculpture—the exclusive right to make (or to license the making of) copies of that work and to prevent others from using the work without permission. Unlike patents, copyrights do not protect ideas, only the expression of ideas. Copyright protection also lasts longer, usually the lifetime of the creator (author) plus a fixed number of years.

Software can definitely be copyrighted, as can program documentation. Most Western countries consider software to be akin to literary work and deserving of the same protection. For most developers, copyright is the only viable way to protect software.

YOUR RIGHTS

Countries that are signatories to the Berne copyright treaty—including Canada and, recently, the US—do not even require that a copyright notice be present for the work to be protected. Copyright exists the moment a work is created. Not all countries, however, are members of the Berne convention. For many years, the United States was a signatory to the Universal Copyright Convention (UCC), but not to the Berne convention. For protection in non-Berne countries a copyright notice like this is required:

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The word copyright can be used in conjunction with or instead of the copyright symbol, and for maximum protection in certain countries the phrase "all rights reserved" should appear immediately after the notice:

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The copyright notice should be displayed prominently within your source code and on the screen as well, if possible.

Note that the letter c in parentheses—like this: (c)—is not a valid substitute for the copyright symbol, so to be safe, be sure to use the word "copyright" in your program source code.

Although registering your copyright with the government is not necessary, doing so affords you maximum protection. In this way, you can sue for statutory damages as well as actual damages in a copyright infringement case. Typically, this involves filling out a form describing the title and nature of the software and including two copies of the source code (or parts thereof) with a registration fee (less than $20 in most cases).

Of course, copyright restrictions are useful only if they are enforceable. While they certainly are, litigation for copyright infringement is expensive, and if the violator has little or no money, about the best you can hope for is to stop the infringement. Unless your software is worth something substantial, there is little you can do in a practical sense to prevent infringement. You must just have faith that your copyright will be respected.

A copyright can be bought and sold much like material property. The owner of a software copyright is usually the person or persons who wrote the software, unless it was done in the normal course of employment, in which case the employer owns the software. The owner of the copyright is granted certain exclusive rights:

1) the right to make copies of the software in any form (this is the origin of the term copyright);

2) the right to sell, lend, give away, or otherwise license the use of those copies; and

3) the right to prepare derivative works.

As you can see, copyright protection enables software developers to peddle their wares to the public in the hope of making a profit and with reasonable expectation that their work will not be pirated. Except for backup copies, anyone who makes and distributes copies of copyrighted software without the permission of the copyright owner is liable to be sued for copyright infringement.

The third right, that of preparing derivative works, is an important right. "Derivative" in this sense means works that are based on one or more other works, as in new versions of programs. Even if you make substantial changes to a copyrighted program, the copyright to the new program as a whole belongs to the original copyright owner.

PUBLIC DOMAIN

Copyright provides protection for a limited but lengthy period of time, especially where software is concerned. When a copyright expires, the work that was protected is said to enter the public domain, after which it is available for use by anyone for any purpose. In other words, it belongs to the public. Copyright protection can also be lost if the work is improperly or fraudulently registered.

Software can also be placed in the public domain by the copyright owner at any time before the copyright's expiration date. This should not be a decision lightly taken, however, because once copyright protection is withdrawn, it is lost forever. While derivative works of public-domain materials can by copyrighted if the changes are sufficiently substantial (such as an English translation of Dante's *Inferno* drawn from the original texts), no one can copyright original works that have lapsed into the public domain.

It should be evident at this point that the phrase "this software is public domain" must be used with the utmost care in your software. Think it over carefully; do you really want to relinquish your rights to the software? Remember that once your software is in the public domain, anyone can do anything with it. This includes selling it to others without giving you a single penny, or including it in commercial software without ►

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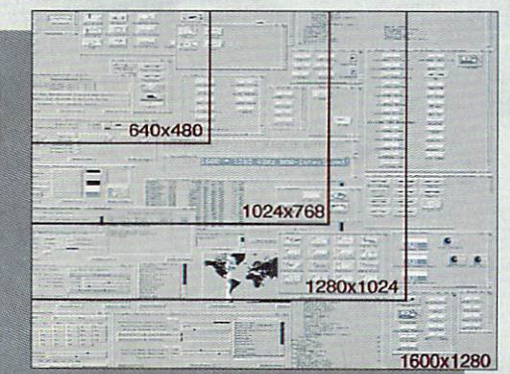
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To implement the Public License, attach the following notices to the start of each source file to most effectively convey the exclusion of warranty. (At the very least, each file should have the "copyright" line and a pointer to where the full notice is found.)

<one line to give the program's name and a brief idea of what it does.>

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You should have received a copy of the GNU General Public License along with this program; if not, write to the Free Software Foundation, Inc., 675 Massachusetts Ave., Cambridge, MA 02139, USA.

In addition to these notices, you should include information on how to contact you by both electronic and paper mail.

If the program is interactive, make it output a short notice like the following when it starts in an interactive mode:

Gnomovision version 69, Copyright © 19xx name of author. Gnomovision comes with ABSOLUTELY NO WARRANTY; for details, type "show w". This is free software, and you are welcome to redistribute it under certain conditions; type "show c" for details.

The example commands "show w" and "show c" should display the appropriate parts of the General Public License. Of course, you may want to use other commands, or even mouse clicks or menu items.

To make the process complete, you should also get your employer (if you work as a programmer) or your school (if you are a computer-science student) to sign a copyright disclaimer for the program, if necessary. Here is a sample:

Yoyodyne, Inc., hereby disclaims all copyright interest in the program "Gnomovision" (a program to direct compilers to make passes at assemblers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989

Ty Coon, President of Vice

For More Information

There are many books available dealing with copyrights and other intellectual property issues. If you cannot find any at your local library (don't forget to check the section on book writing) a good bet is the nearest college or university library. Be sure to check the publication dates on the books, as copyright law is always evolving. *Software Protection* by G. Gervaise Davis III (Van Nostrand Reinhold) is a good introductory book, if somewhat dated. For those with a keen interest in the subject area, *The Law and Business of Computer Software* edited by D.C. Toedt (Clark Boardman) is also a good choice. United States residents can obtain copyright-registration information by writing to the Register of Copyrights, Copyright Office, Library of Congress, Washington, D.C. 20559.

But remember: no book or article can substitute for professional legal advice. When in doubt, consult an intellectual property lawyer—your family lawyer is unlikely to have the expertise you need.

By the way, the example "copyright statement" at the beginning of this article illustrates what *not* to do if you wish to keep the copyright on your software. That statement might be ruled nonsensical (because of the use of the words "public domain"), and copyright protection could be lost if an infringement case ever came to court. ■

Eric Giguere is the author of Amiga Programmer's Guide to ARexx *(Commodore/Amiga, 1991), and a member of the Computer Systems Group at the University of Waterloo. Write to him c/o the Computer Systems Group, University of Waterloo, Waterloo, Ont., Canada N2L 3G1.*

PUBLISH WITH PANACHE

Producing a fresh, captivating publication involves more than pumping out prodigious amounts of prose. We'll show you how to make the right choices in terms of fonts, layout, image manipulation, and more—so you can get your point across with style.

By Victor Osaka

IT'S THE CONTENT that really matters, right? Who needs to *design* a newsletter?

In truth, both content and design are important. People are more apt to read your material if it is pleasing to the eye. If they must strain to read the text, however, they will neither enjoy it nor be in a state to absorb its content. Imposing blocks of tiny or unreadable type may cause readers to skip over your text altogether.

Having seen scores of newsletters and produced one myself, I know that the quality and appearance of your newsletter depends less on your equipment or desktop-publishing program than on your sense of design aesthetics. Careful use of type and graphics make the real difference between a good design and a great one. This article offers some design ideas and concepts to make your newsletter more effective, and shows how your Amiga software can help.

In describing some parts of the process, I'll refer to the black-and-white monthly I publish, the *3D Art Forum International* (3DAFI) newsletter, which is produced entirely on the Amiga. It is 12 to 14 pages (11×17 sheets folded in half) and contains lots of high-resolution IFF images in addition to text. *(To locate vendors of the products mentioned, see the "Manufacturers'/Developers' Addresses" list on p. 104.)*



GOOD DESIGN

To begin thinking about design, I suggest that you start a "good designs" file for tear sheets and clippings from the most effective, attention-grabbing newsletters you see. You can refer to these for inspiration and education in the finer points of good design.

Think you don't know what good design is? Really, at least on a subconscious level, you do—and you respond to it. What you must do is educate your conscious mind to implement what you already know. Ask your- ►

ILLUSTRATED BY MARY JO MAZZELLA



self "What is it about these designs that makes me like them?" You will find that you can indeed recognize good newsletter design.

When looking at the designs in your clip file, notice where your eye gravitates to. Your eyes should move logically over the page, first to the title of the newsletter, then toward the headline of the main article, and finally to other auxiliary information blocks. Also, pay attention to the flow of information from page to page. Does your eye easily find where the article continues?

Go ahead and model your newsletter after a successful publication, but do not copy it directly, and do not duplicate articles or images; they are copyrighted.

Your design sets the "personality" of your newsletter, which depends in large part upon your audience. To determine your graphic-design goals, first analyze your audience. Is it technically or artistically oriented, young or old, academic or otherwise? Review examples of newsletters, promotionals, and trade magazines in its field of interest. Knowing what your readers encounter in other publications will help guide you to what they might expect from yours. In the end, though, it is you who must be pleased with the results.

Before implementing a design on the computer, create a "mockup" of it with pencil and paper. The grid system helps you to determine your margins, column width and space between columns. Do a few different grids and let them sit for a day. Then look at them again with a fresh eye tomorrow. The resulting template is important, as it forms the basis of all your future issues.

Programs such as **Professional Page 3.0** (***Gold Disk***) and **PageStream 2.2** (***Soft-Logik***) allow you to set your final grid system and apply it to all pages of your newsletter (except, probably, for the first page or cover). When you are ready to import the text of your articles, it will flow right into your pages automatically.

The Elements of Style

The ultimate goal of design is to facilitate effective communication. To achieve that goal, you must grab the reader's attention and hold it. The article titles should immediately catch the eye, pull quotes emphasize important points, and graphic elements and images reinforce the content, not overrun it. The proper choice of type should carry the reader through without fatigue.

And don't forget air: A good design "breathes" visually. It will have a balance of white space, type columns, headlines, and graphics. With careful use of white space, you can emphasize your titles and pull quotes and focus the reader's attention. You can manipulate balance by justifying the body text or by ragging on either side. Your choice will depend on the type of reader you are catering to. Print out a sample of your design using two or three columns with a variety of column gaps between them. You may be surprised at how different gaps can affect the readability of your page.

As mentioned before, overly small type can drain your reader, but the issue of type goes beyond just choosing the right size. Different faces, line leading, and kerning variations can make a tremendous difference in readability. When choosing a type treatment, consider the final output method: Linotronic output at 1240 dots per inch (dpi) may give some type faces overly fine detail, and 300-dpi dot-matrix output can make some type look too dark.

Depending on the appearance you want to create for your newsletter, you might choose a serif font (Palatino, for example) for the body text and a sans-serif font (such as Univers) for the headlines. In any case, a good design will minimize the variety of fonts used on a single page. Different type styles help to organize and emphasize elements, but should not distract the reader. Using style tags will speed up the process of designing your newsletter by allowing quick and effortless global changes for experimentation.

To help determine a readable font treatment, you will need an ASCII-format text file for "greeking." (Some say that it is best to use nonsensical type, but I just use the documentation from one of my programs.) The file should be large enough to fill your entire newsletter, and you should use the same file for all your design iterations. Flow this type into a page and run out samples using a variety of fonts at the size of your newsletter. Vary the leading, kerning, and type faces for these tests and save them as a reference for future type-design decisions.

On the Amiga, both Professional Page and PageStream use outline-font technology. This gives you the best quality type for any printer. I recommend purchasing a variety of fonts for your library. There are several hundred Adobe Type 1 fonts, which you can find on many Mac and PC BBSs. Both PageStream and Pro Page can easily convert these to Amiga-compatible outline fonts.

PageStream allows you to scale, stretch, twist and rotate outline fonts, abilities indispensable for creating dynamic headline type. You can use its drawing tools to create stylized filigree and then save it as an IFF image for use in any layout program. You can get a similar effect with ***Gold Disk***'s **Professional Draw** and move the results into either Professional Page or PageStream, the latter of which also allows you to manipulate your Professional Draw clips.

Outline-font technology makes it easy to include drop caps in your design. A drop cap is a very classy treatment that involves enlarging the first letter of an article, making it anywhere from 3 to 20 points larger. For variety, try a reverse letter within a black box, or filigree surrounding the character.

More Than Words Can Say

Any images you include in your design should intimately relate to the article, and you should carefully consider their placement and size. In general, images should accent the article—not the other way around.

Both PageStream and Pro Page can import superbitmapped 24-bit images, but keep in mind that there is a point beyond which a higher resolution won't buy you any improvement in quality. Consider processing your very hi-res superbitmaps down to a more reasonable size using ***ASDG***'s **Art Department Professional** (ADPro). I find that images are an important aspect of 3DAFI. The cover, for example, incorporates a large, 3-D generated IFF image.

Working with images in an Amiga desktop-publishing program can be difficult (the problem is related to hardware, not software.) Neither Professional Page nor PageStream gives you a great representation on the screen, which makes it difficult to compose directly on the monitor. I find it best to print out images oversized beforehand, and then scale them down with a photocopier to determine a good size. I then scale the on-screen image to match the photocopied piece. ►

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If you are going to print 3-D rendered images, you will probaly find them too dark. ADPro or ***Soft-Logik***'s **BME** (Bit Map Editor) can help you make them perfect. In addition, PageStream can import several Mac, PC, and Amiga formats.

I use both Professional Page and PageStream for newsletter production. The latest versions offer many powerful tools. Professional Page 3.0's Genie function is ideal for newsletter layout design and its links to ADPRO and Professional Draw 3.0 are fantastic. Pro Page is a joy to use when dealing with large image files, because the images remain on the hard disk and not in the resulting file. PageStream, on the other hand, writes your image(s) directly into the file, so your graphics capabilities are limited by the amount of RAM you have. And because the resulting PageStream file can be extremely large, storage can be a problem. PageStream's forte, however, is its superior treatment of fonts and the ability to print superior halftone images on the ink-jet printer. The latest version offers its own links to useful text- and image-editing programs.

One caveat in using Pro Page and PageStream together: The programs do not talk to each other. You must create mechanicals (pasteup or composite) using final output from both—which I find easy to do.

Paper and Print

Paper selection is a very important decision if you want your newsletter to be of the highest quality. The right choice in paper can give you brighter type, crisper feel, and better-folded edges. Don't take these things lightly; they can leave an indelible (although perhaps unconscious), impression on the reader.

Look for a paper that is very smooth, light and crisp, and dense enough so that the printing on one side does not show through to the other. Make sure that the edges do not crack when folded in half. There are literally hundreds of paper choices. Ask your local paper distributor or manufacturer for samples and availability in your area.

The printing method you use will depend upon the number of pieces you must distribute and the quality you wish to achieve. If you need to print more than a thousand pieces, consider paper or metal plates. Paper plate is a relatively inexpensive process, although the images it produces are generally not very crisp and contrasty. The more expensive metal-plate method gives you beautiful image quality and clean, sharp type (only as good as your originals, of course). Because of the quality metal plates afford, in using them you should go to Linotronic output of your masters.

Simple photocopying is not recommended unless you require only a very small number of copies and images are not an important element in your design. Although laser copying is a bit more expensive, it is worth it. I have found the quality to be superior—as good as metal plates in most cases.

I create all the masters (mechanicals) for the 3DAFI newsletter with ***Hewlett Packard***'s **DeskJet** printer. Because the newsletter's cover is so important, I send it to a service bureau for Linotronic output at 1250 resolution and 120 line screen. All the originals then go to a print shop, where they are output on a high-quality laser copier.

The issues involved in publication design and production are vast and cannot be adequately addressed in one article. For more guidance, I recommend you look into a number of sources. *The Designer's Guide to Text Type*, by Jean Callan King and Tony Esposito (Van Nostrand/Reinhold, 1990), is a time-saving compilation of several dozen type faces, styles, and leading combinations. *Newsletters—From The Desktop* by Roger C. Parker (Ventana Press, 1990) is filled with excellent information and examples. ■

Victor Osaka is editor and publisher of the 3D Art Forum International newsletter, which serves the Amiga 3-D educational foundation that he founded. He is also president of the organization, overseeing support, information, and discount offers to members. Write to him at 1341 Ocean Ave., Suite 349, Santa Monica, CA 90401-1066, or call 310/398-7649.

The Newsletter Design Process

- Determine who your readers are and what they would like from your publication. If you don't know, conduct a survey.
- Create a design that communicates with clarity, interest, and directness. You might style your publication after another successful one (without copying it, of course).
- Create a grid system that sets margin and column widths in which to flow your text.
- After flowing the text files into your pages, create your headlines and subheads, then create or input graphic elements and IFF images. Can you fit it all in without compromising the design?
- Proof print the newsletter on a dot-matrix or laser printer. Check for major errors and omissions and evaluate your layout. Does it work visually?
- Send your files to a service bureau for Linotronic output or print them at the highest resolution of your printer. The results are your masters (or mechanicals), ready for the print shop.

Design Checklist

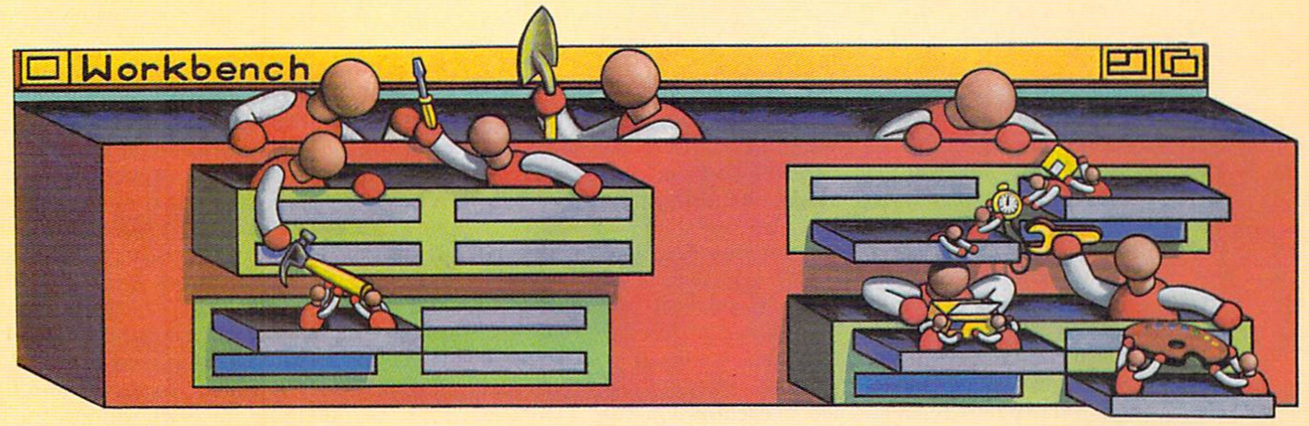
- Do your eyes follow a logical pattern: first to the masthead, headlines, pull quotes and then subheads?
- Are the headlines and subheads intriguing and to the point?
- Do the type face, type size and leading make the text easy to read?
- Is there a good balance of white space, type columns, and graphics?
- Are the pull quotes and subheads effective and clear?

Working Conditions

WITH THE RIGHT hardware, Workbench 2.0 allows for a larger working screen, which both Professional Page and PageStream can take advantage of automatically. *Digital Micronics*' DMI Resolver board upgrades your screen to a high-resolution graphic display. And personally, I am a firm believer in anti-radiation screens. I find that I can work much longer at the computer without fatigue using *NoRad Corporation*'s anti-radiation screen, which I feel is the best.

Accelerators and extra memory do wonders for desktop publishing. Don't be mistaken; your life will change dramatically if you install an accelerator, preferably a 68040. This is especially true if you use PageStream or Professional Draw: Screen refreshes and file imports speed up to more reasonable rates.

Organization is paramount when you are dealing with many files. A good disk utility such as OPUS (*INOVATronics*) or DiskMaster (*Progressive Peripherals & Software*) makes managing them much easier. Be sure to keep your original work files in archive. Programs like Quarterback (*Central Coast Software*) and AmiBack (*Moonlighter Software*) are essential for irreplaceable files. I compress my files with the public-domain program LZ before archiving them. □



Digging in to DOS

A SERIES THAT EXPLORES THE AMIGA'S RELEASE 2 DISK OPERATING SYSTEM

This, our first installment, investigates things you should know before you modify your AmigaDOS startup-sequence.

Release 2 incorporates by far the most significant set of changes to AmigaDOS since the operating system was released as version 1.0 in 1985. While some modifications may not be readily apparent, they alter some of the "rules" we have come to take for granted.

One area that includes many such changes is the boot procedure. In all 1.x Workbench versions, Kickstart reads the user preferences from the DEVS: system-configuration file before it opens the initial CLI window. By the time it begins to execute the s: startup-sequence script, Kickstart has already opened a Workbench screen that conforms to such user-defined preferences as screen type (interlaced or noninterlaced) and font (Topaz 8 or 9). Editing the startup-sequence file is a time-honored tradition in Workbench 1.x versions, and there are not many ways to generate problems by adding commands to it.

In Release 2, however, the whole system of preferences has changed drastically. Settings are stored in individual files on the Workbench disk in the sys:Prefs/env-archive/sys drawer, which bears the logical-device name ENVARC:. The startup-sequence script creates the env and env/sys directories in the RAM disk and assigns ENV: to RAM:env. It then copies all files and directories from ENVARC: to ENV:, including the preference files, which go to ENV:sys.

Later in the startup-sequence, the IPrefs program executes. IPrefs not only reads the preferences files in ENV:sys and establishes the initial settings, but also watches those files and alters the settings when it detects changes. When you select the Use option from one of the Preferences editors, a new version of the preference file is written to ENV:sys. IPrefs reads the new file from there and changes the setting. Because ENV: is assigned to the RAM disk, this change lasts only until you reset or turn off your computer. When you select the Save option, however, the file also copies to the ENVARC: directory, making the change permanent.

This new procedure works very well and has a number of benefits. It allows Commodore to easily add new ►

BY SHELDON LEEMON

ILLUSTRATED BY BARTON STABLER

preference items, such as sound or Postscript Preferences, without a ROM upgrade. This scheme also serves as a model for third-party hardware and software developers. By following Commodore's example, companies can create their own preference editors with the same look and feel as Commodore's, and use their own programs to monitor the preferences files that these programs create.

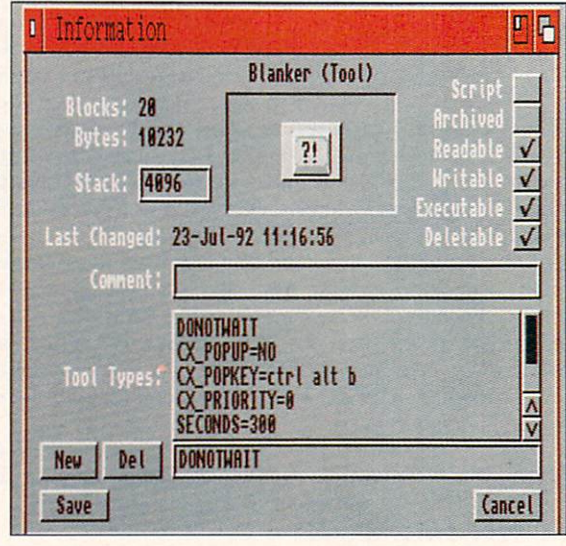
Because Kickstart automatically copies the contents of the env-archive directory to ENV:, you can even save archival copies of environment variables to this directory. By thus creating permanent versions of these variables, you need not re-create them at each session with the SETENV command.

Screening Room

As with the old Kickstart, IPrefs must set screen preferences (such as mode, font, and overscan) before any screens or windows open. If a Workbench screen opens before the new preferences are established, Kickstart must close that screen before IPrefs can open one that matches the preference settings. The problem is that Workbench cannot close a screen containing windows (such as the Shell window) that it does not directly control. To avoid this situation, the new Kickstart does not open any display until it is absolutely necessary to output text from a program or to display an error message or requester. That is why the initial screen stays blank so much longer under 2.0 than under 1.3.



Programs in the WBStartup drawer run automatically when you boot—usually in the order in which you added them.



Adding the ToolType DONOTWAIT to a programIcon instructs WBStartup not to wait for the program to finish before starting the next one in the drawer.

If you examine the 2.0 startup-sequence file, you will see that output from commands coming before IPrefs is either suppressed with a Quiet switch or redirected to NIL:. If you put one of your own commands at the beginning of the 2.0 startup-sequence and if that command generates some text before IPrefs establishes the screen and font preferences, the Shell will be forced to open a window on a default screen. Then, when IPrefs runs, it will be unable to close the old Workbench screen containing the Shell window, and will complain by issuing the following mysterious message in a requester:

```
Intuition is attempting to reset the Workbench screen.
Please close all windows except drawers.
```

If you get this message every time you boot your system, you have probably added a command line somewhere in the startup-sequence before IPrefs. The simple solution is to redirect the output of any new command line to NIL:. If the program is called MYCOMMAND, for example, and it takes the command arguments "arguments," change the command line from

```
MYCOMMAND arguments
```

to

```
MYCOMMAND >NIL: arguments
```

The only other time you may see this message is when you change screen or font preferences after opening a program that puts a window up on the Workbench screen, such as VirusX or the Shell. Intuition cannot reconfigure the Workbench screen until all "visitor" windows are closed.

Here, Not There

The new preferences scheme is not the only thing to keep in mind when modifying your startup-sequence file. Lots of crucial system functions (such as monitor descriptions) are included in this script in 2.0, and Commodore will add more in the future. The more important it is to run the commands in the startup file in the proper order, the greater becomes the risk of bringing the whole system to a halt by careless editing of this file.

To minimize this risk, Release 2 introduces the concept of a "user-startup" file. If you put such a script file in the S: directory, Kickstart executes it automatically as part of the startup procedure. Commodore advises all users to add new commands and assignments to this file, rather than editing the startup-sequence file. It is also a good idea to make sure that programs designed to modify the startup script (such as hard-drive installation scripts) perform their operations on the user-startup file instead of the startup-sequence file.

Of course, modifying either the user-startup or the startup-sequence file requires some familiarity with text editors and the AmigaDOS command interface. Because one goal of the new operating system was to free the user from having to deal with nonvisual, user-hostile interfaces, Release 2 introduces a completely icon-driven alternate method of automatically running certain programs every time the computer boots. ►

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The new Workbench disk contains a new drawer called WBStartup. To automatically run a program each time you start, just drag its icon into the WBStartup drawer. It's as simple as that.

You should know, though, that programs in the WBStartup drawer execute in the order in which they appear in the directory. This generally corresponds to the order in which you dropped them into the directory. You can see this order by calling the names with the LIST command (LIST Sys:WBstartup) from the CLI. (DIR is not of use here, because it alphabetizes the list.)

If the order of execution is an issue—if one program will not run unless ARexx has been started, for example—you can usually modify it by dragging all the files in the WBStartup drawer to the RAM disk, deleting them from the WBStartup drawer, and then dragging them back to WBStartup in the correct order. If this does not work, you may have to add the command that runs first to the s: user-startup script, which executes before the WBStartup icons.

Another point to keep in mind is that the system waits for each program to finish before it launches the next one. If any program does not finish within a couple of seconds, Workbench pops up the requester:

Program 'Name_of_program' has not yet returned.

Should I wait some more?

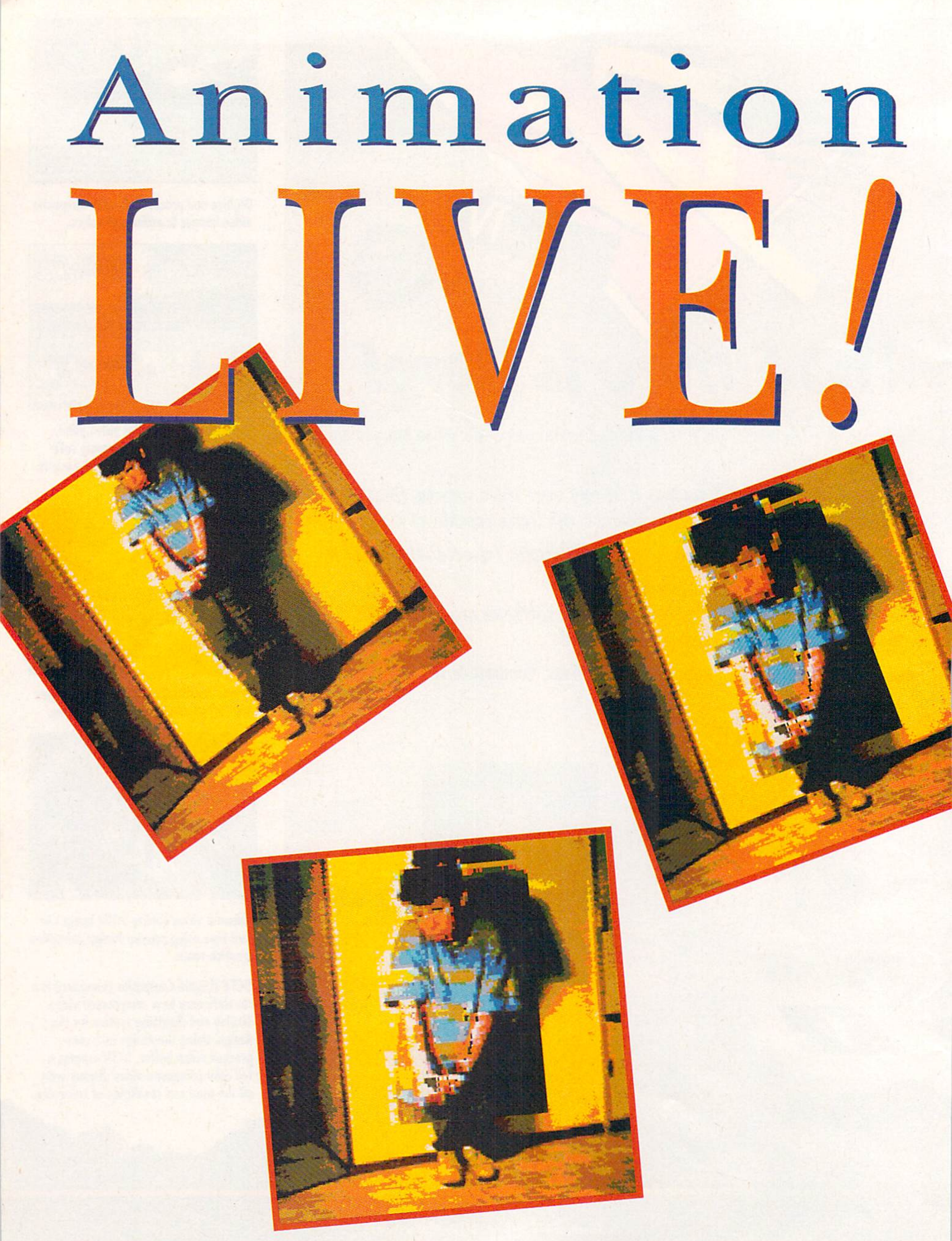
You can instruct the system not to wait for a program to finish by adding a ToolType line reading DONOTWAIT to the program's icon. Just click once on the program icon, select Information from the Tools menu, click the New button under ToolTypes, type DONOTWAIT, hit the Return key, and click on Save.

Commodities programs such as Blanker and ClickToFront (found in the Tools drawer) make excellent candidates for the WBStartup drawer, but many of these programs pop up a settings window when you run them, even if the settings are saved just as you like them. If you add the ToolType CX_POPUP=NO to the icon of a Commodities program, it will not open a settings window when it runs.

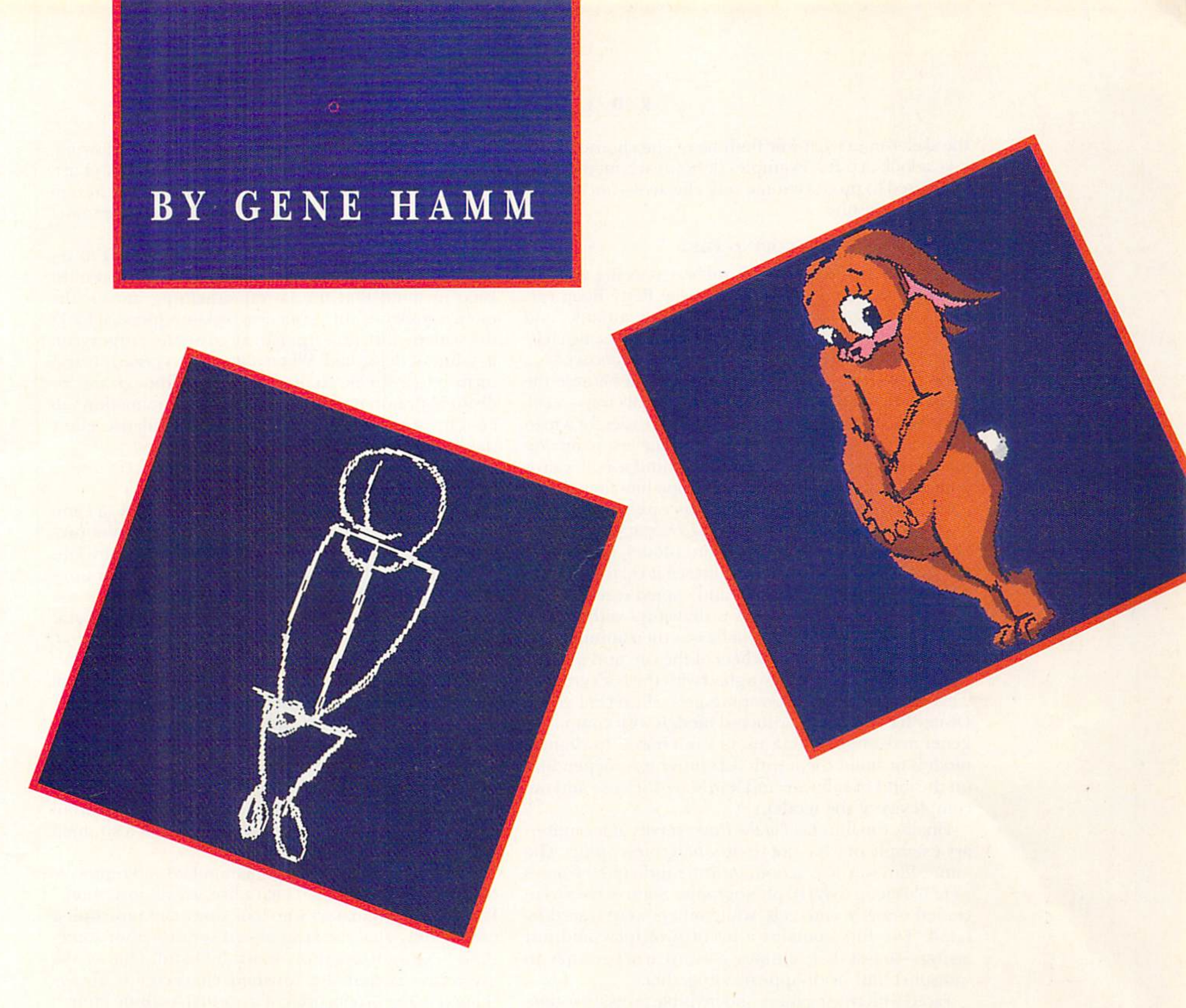
When you think about it, you'll probably come up with lots of types of programs that you want to run automatically; ARexx, virus checkers, keyboard enhancers, appointment calendars, a clock, and so on. By using the WBStartup drawer, you can modify your boot procedure with the greatest of ease, and with no fear of generating some obscure error in an arcane script file. ■

Sheldon Leemon, a respected authority on the Amiga, is finishing a book about Workbench 2.0. When he's not writing, you can find him at Slipped Disk, a Detroit-area Amiga dealership.

Animation LIVE!



BY GENE HAMM



For animators who aren't professional artists,

rotoscoping is a neat trick for creating smooth, high-quality animations.

Rotoscoping—the process of tracing over live action, frame by frame, and turning it into a moving drawing—is probably one of the more controversial and least understood techniques in animation. But while professional animators are divided over its merits, computer animation buffs who are not accomplished artists can get a lot of mileage out of this excellent technique.

The reason that rotoscoping is a dirty word to many of the pros is that they view the technique as a crutch for people who cannot draw the human body. Yet other shrewd practitioners view it as a handy trick when they need to quickly capture the essence of an action or gesture. Let's leave the debate to the academy and move on. Whatever its pros and cons, rotoscoping is used by animators more than they care to admit—and often to great effect.

Rotoscoping can result in very beautiful animation, as in the old Betty Boop cartoons and *101 Dalmatians*, or in awkward, jerky movements, as in the movie *Lord of the Rings*. The trick to rotoscoping is to know when to be *interpretive* with live action and when to be *literal*. The fundamental rule to keep in mind is this: If live action is not altered in some significant way, it is not animation. So, if the animation appears so real that it seems live, save yourself a lot of work and just use live action.

Generally, literal rotoscoping is good for (pardon the pun) "inanimate" objects, where the mechanical look is a plus, while interpretive rotoscoping is best for humans and animals, where smooth, fluid movement is required. Often, the best rotoscoping results are obtained when the animator—working interpretively—looks at the live action to estimate not where the outline of a figure is, but where the skeleton is. The skeleton is what is traced, with the animator then dressing ►

the skeleton in whatever flesh he or she chooses. Let's take a look at a few examples of how each method has been used to produce some very effective—and not-so-effective—results.

Lessons of Rotoscoping Past

Cab Calloway's exaggerated, rubbery dancing was well suited to animation. In several of the Betty Boop cartoons, animators used Calloway's timing, attitude, and gestures as reference points to create fluid dancing characters. One of the cartoons, "Minnie the Moocher," is a good illustration of interpretive animation because the rotoscoping employed in it transformed Calloway—a tall, thin man—into a roly-poly walrus. It was easier for a man to act as if he were a walrus—leaving the rest to an animator's imagination—than it was to find a real walrus dancing on its hind legs and rotoscope him literally.

On the other hand, literal rotoscoping was put to excellent use in Walt Disney's *101 Dalmatians*. Cruella De Vil's car was a white cardboard model, outlined in black so that the animators could see it clearly. Shot in frame-by-frame stop motion and copied directly onto cels, the car looked just like a drawing—without any help from the animator. Cruella was then animated by hand, sitting behind the wheel of the car, and the cels were painted and photographed with the background. This is as literal as rotoscoping gets. (In recent years, Disney has replaced cardboard models with computer-generated ones. Amiga users can choose to digitize models or build them with 3-D programs, depending on the kind of software and hardware they use and the complexity of the model.)

Finally, the film *Lord of the Rings* serves as a cautionary example of what not to do when rotoscoping. The entire film was live action, and the individual frames were blown up to 8×10 photographs. Some scenes were copied directly onto cels, while others were traced by hand. The film contains a lot of swordplay and fast action—so fast that, at times, a sword arm becomes an indistinct blur or disappears altogether.

Faced with tracing blurs and invisible arms, first-time animators did the logical thing: They drew anatomically correct, perfectly foreshortened arms in the mathematically correct position of the arc of a sword swing. Each individual drawing was an exquisite work of art. The trouble, however, was that when projected at film speed, the animation lurched along as if it were something out of the movie *Night of the Living Dead*.

What went wrong? The animators neglected to remember the basics of "squash and stretch." You must keep in mind that the faster something moves, the more it stretches out. As an arm picks up speed, it looks deformed. But don't perform cosmetic surgery on it—draw it deformed! When it goes even faster, an arm turns into a streak, so draw a streak. Although the individual drawings may look strange, the animation will be a lot smoother because it is the cumulative effect that is important, *not* the individual frames.

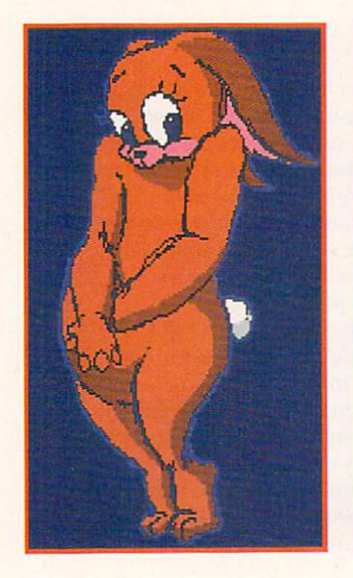
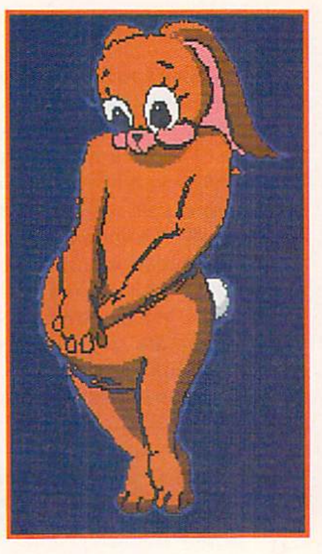
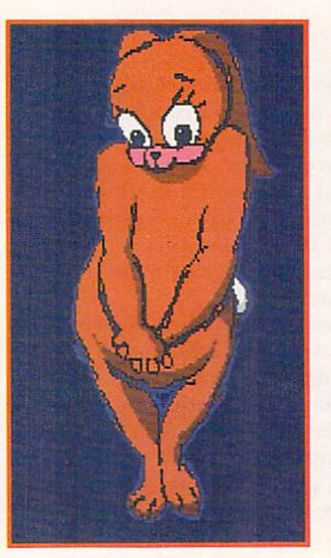
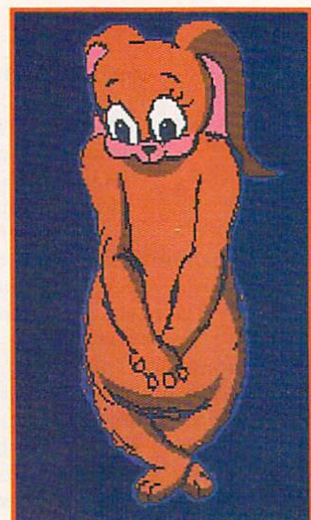
Rotoscoping Basics

To rotoscope on the Amiga, you need a VCR (a camcorder is best), a digitizer, and an animation/paint program. Personally, I find the best digitizer for my jobs is ***A-Squared Distributions*' Live!** because it captures multiple frames from a VCR in real time. Once the images are grabbed, I use ***Electronic Arts*' DeluxePaint IV** to process and play them back. *(See the list on p. 104 for vendors' addresses.)*

Shoot your subject against a blank wall. The wall should contrast with the subject: A light subject calls for a dark wall, and a dark subject requires a light wall. Forget about subtlety in acting for rotoscoping. Ham it up and exaggerate movements. Tell your subject to pretend to be a stage actor and to make broad sweeping gestures. What appears ridiculously overdone in live action will look completely natural and restrained when turned into animation.

With the Amiga's ability to manipulate and reprocess digitized shapes, you can turn a live actor into a "toon." Professional animators who look down on rotoscoping usually brag that they can always spot whether something was rotoscoped or drawn by hand. One of the giveaways is that the finished character is always shaped in the proportions of a normal, realistic human body, just as in a monster movie you can tell that it's only a guy in a lizard suit.

Figure 1. Some sample frames from the finished animation sequence that was created through rotoscoping techniques.

Toons, by contrast, are half the height of regular humans, as was graphically illustrated in the film *Who Framed Roger Rabbit?*. Roger came up only to Eddie Valiant's waist. Real humans are eight heads high; toons are four heads high. Rotoscoping can turn normal human proportions into toon proportions, thereby eliminating a vital clue to the source of your animation.

ROTOSCOPING IN ACTION

For my sample rotoscoping demonstration (some of which appears on the opening spread of this article), I videotaped my subject acting as if he were a cute, shy, Disney-like baby bunny. His hands clasped in front of him, feet pigeon-toed, knees together, upper body twisting left and right, and head tucked into his shoulders made a nice repetitive cycle.

After viewing the tape, I found the section I liked best and opened Live!. In the Capture menu, I set the number of frames I wanted to grab, choosing a number that was a bit higher than I actually needed just to play it safe. I played the tape and pressed F9 to capture the frames. After pressing F10 to replay that sequence to make sure it was the section I wanted, I saved it and returned to the Workbench. At the Live! window, I double-clicked on the Playriff icon. From the only menu present there, I selected 1st Frame and then Save Frame, and then continued with Next Frame and Save Frame until I had saved all the frames.

When I had finished saving them, I closed Live! and opened DeluxePaint IV. I loaded all the Live! frames at once via the Picture menu. In the # of Frames box, I set the total number of my captured Live! frames and double-clicked on the first frame, which saved me from having to load them individually. I then pressed 4 to run the frames continuously so that I could see if there were any that I needed to trim in order to ensure a smoother cycle. (If I had wanted to lose a frame here, I would have gone to the Anim menu and looked under Frames for Delete.) To be on the safe side, I saved the cycle as an ANIM.

After turning on the grid, I grabbed a brush from the top of the head down to the waist and enlarged the brush to the correct size by pressing the Plus key (+) four times. Next, I stamped the brush so that the waist registered to the knees and then repeated that procedure on every frame. After playing this cycle to see if it animated smoothly, I saved it as an ANIM.

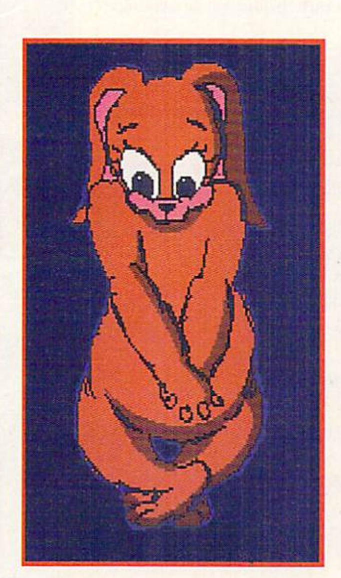
With the grid still on and starting back at the first frame, I grabbed a brush of the head, enlarged it by pressing the + key three times, and stamped it down so it appeared to sit correctly between the shoulders. I repeated that procedure on every frame, and when the sequence appeared to animate smoothly, I saved it as an ANIM. The proportions were then correct for a cute, baby-bunny-type character.

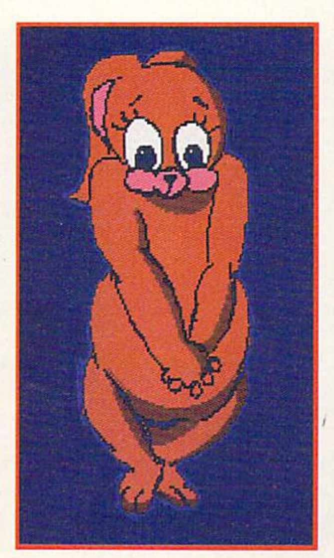
For the final phase, I started at the beginning frame once again. After each frame, I added another and then cleared the added frame so that I wound up with every even frame clear. From the Anim menu, I turned on the Control panel (Alt-A) and then the Light Table (1). I moved to frame 2, the Clear frame. With the Light Table on, I could see frame 1 and the figure it contained as I was drawing on frame 2.

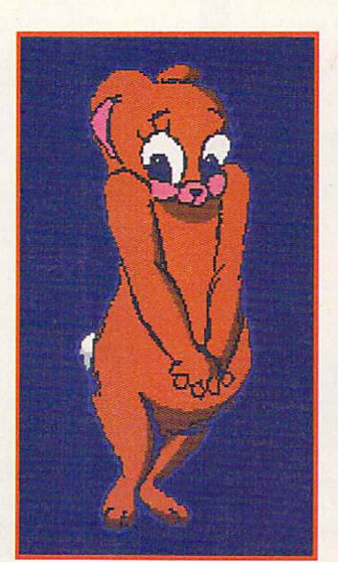
I looked at that body as if it were an x-ray and drew only the stick figure inside it for frame 2. I drew a stick figure for each body, until the succession of frames became body, stick figure, body, stick figure, and so on. I then deleted all the bodies, leaving only the stick figures. When this cycle passed my viewing test, I saved it. Next, I drew the finished baby bunny in another color over the stick figure, and stenciled out the stick figure. After a little minor tweaking here and there, the animation—several frames of which you can see in Figure 1—was done.

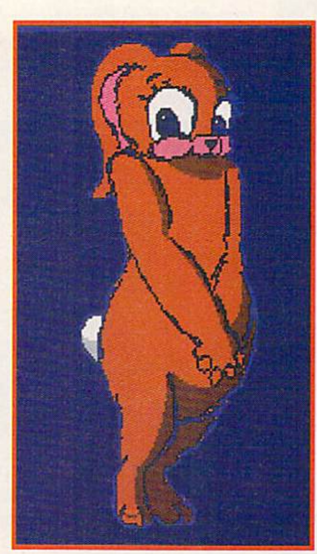
Through rotoscoping techniques, the digitized live actor can be invaluable in determining timing in your animation. You can do this as precisely and as religiously as I did in my demo, or you can simply rotoscope the extremes and then draw the in-betweens freehand. Much can be learned from digitizing humans and animals and analyzing their movements. ■

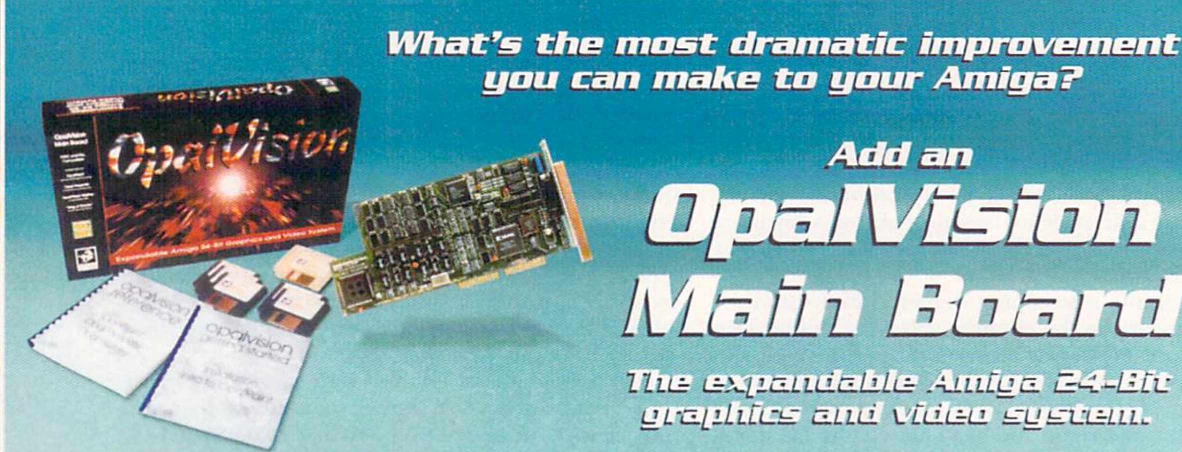
Gene Hamm is a veteran animator who works for Colossal Pictures. His credits include work on The Gumby Show. *Write to him c/o* AmigaWorld *Editorial, 80 Elm St., Peterborough, NH 03458.*











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A continuing series of tips, techniques, and tricks for creating more imaginative Amiga graphics.

By Joel Hagen

Hand-Made Natural Textures

FOR THE COMPUTER artist, texture screens have many uses. In 3-D rendering software, they can be used as "texture maps" to give realistic surfaces to objects. They can also serve as backgrounds in video and slide production or as brush fills in painting. Texture screens are standard IFF images of surfaces such as marble, brick, wood, and so on. Many 3-D renderers come with some textures included, and libraries of texture images are available commercially. A scanner or video digitizer can capture textures photographically. This column, however, will explore methods the computer artist can use to create natural-looking texture images from scratch with painting and image-processing software. *(To locate vendors of the products mentioned, see the "Manufacturers'/Distributors' Addresses" list on p. 104.)*

Random Harvests

There are many approaches an artist might take in creating such textures. I will focus on one fundamental technique with many variations. A few of the results of these experiments can be seen in the accompanying illustration. The foundation of each of these textures is a screen of random gray pixels. In fact, with the exception of the wood texture, I developed each image from the same random screen. That initial pattern of dots was put through a variety of simple image-processing sequences to produce the different textures shown in the swatches. Colorization of each texture was the final stage.

I used a variety of software in these experiments—**DeluxePaint IV** (***Electronic Arts***), **Director 2** (***Right Answers Group***), **PIXmate** (***Progressive Peripherals***), **Art Department Professional** (***ASDG***), and **Imagemaster** (***Black Belt Systems***)—but to follow the examples, you do not need all these programs. Any paint package and any image-processing program should suffice.

There are at least two fundamental ways to create the base screen of random pixels. You can paint the pattern manually with something like DPaint's airbrush tool, or you can create it through a script-based graphics program such as Director 2, using its Point command while randomizing the Pen color.

In DPaint, work on a 640×400 screen with a spread of 16 grays from black to white. Make Range 1 the full spread of these 16 grays. Use the airbrush with the single-pixel or the three- or five-pixel brush. Turn on Cycle mode (F7) and cover the entire screen with spray. All 16 grays will be randomly sprinkled over the image. Save this image for further processing.

A similar screen can be created by using Director 2 in an unconventional way. Use random numbers to change the Pen color each time the Point command places a dot on the screen. Either use random x and y coordinates for the Point, or set up a loop to draw each pixel sequentially from left to right on each line in succession until the screen is filled. You can employ a similar approach in Amiga Basic or with ARexx linked to a paint program.

Once you have created the base image, load it into your image-processing software. PIXmate is a good, basic image processor for non-24-bit work. AD Pro offers a number of operators and convolve matrices that perform sophisticated image processing, while Imagemaster provides screens full of buttons to experiment with in its Process panel. The latter two programs work in a 24-bit color environment and can render in any Amiga resolution.

A Textures Six-Pack

Now for some results. The "sand" texture in the illustration is the easiest to create because it is simply a blurring of the random-pixel screen. In PIXmate, use the AVE averaging button in the Image Process panel. In AD Pro, choose the Blur operator or try the Gaussian matrix in the Convolve operator. I did all my experiments in gray scale for clarity and then colored them later by altering the palette. The simple blurring of the random dots gives a photographic quality to the pattern

By combining a few simple painting and image-processing techniques, you can create realistic, natural-looking textures in minutes.

that is quite convincing.

For the "basalt" texture, start with the same screen, averaging as described above. Next, perform a Laplace operation with the LAP button in PIXmate or the LaplacianEdge convolve matrix in AD Pro. This breaks the image into higher-contrast clusters of pixels. Finally, average or blur this image again and run it through the Deep Press convolve matrix in ADPro. If you are new to image processing, don't be put off by the terminology mentioned above; just press the buttons and evaluate the results.

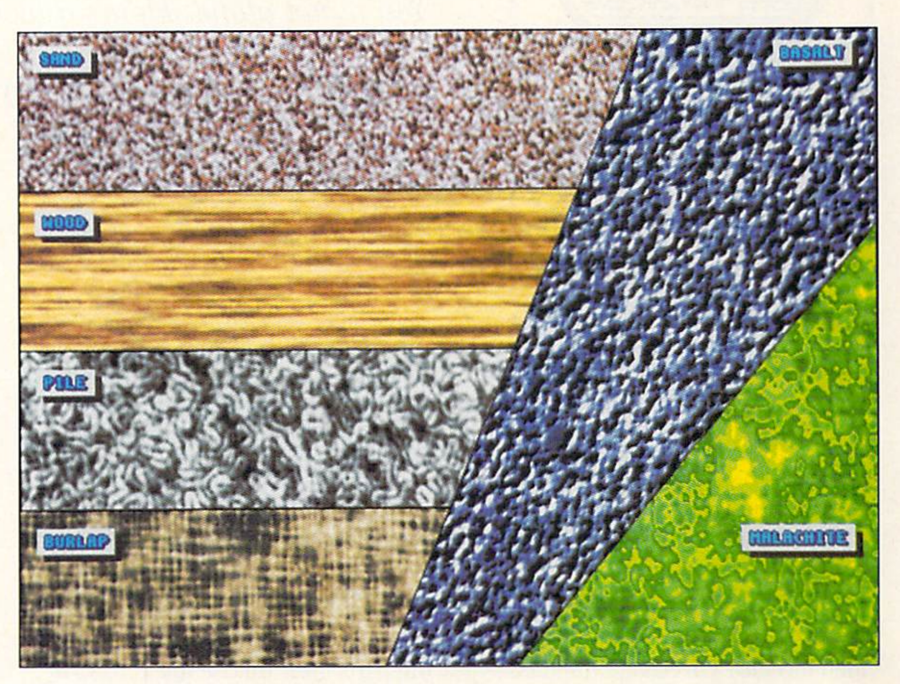
For the "malachite" texture, use the Gaussian convolve matrix in AD Pro on the original hi-res base screen. If you are using PIXmate, the AVE button works well for this blurring. In Imagemaster, try the Smear effect found under Filters in the Process panel. Next, adjust the palette to two sequences of green. The gray image contains a straight sequence of values from dark to light. Change the palette manually so that colors 0 through 6 form a dark-to-light sequence and colors 7 through 15 form another. This creates the concretion texture you see in the illustration.

The "pile" effect, which looks to me like synthetic carpet, starts as a random 320×200 base screen. In PIXmate, reformat this to 640×400 and average the image. This creates larger clumps than those resulting from using a hi-res base screen. Next, select Pixmate's EDG button to perform an edge detection. Finally, average the image again.

For the "burlap" texture, use a 320×200 random base screen. Load that into Imagemaster and select Make Shine from the Special Effects screen of the Process panel. Perform Make Shine on the entire image. Reformat the image to 640×400 and blur or average it as described above to produce the finished effect.

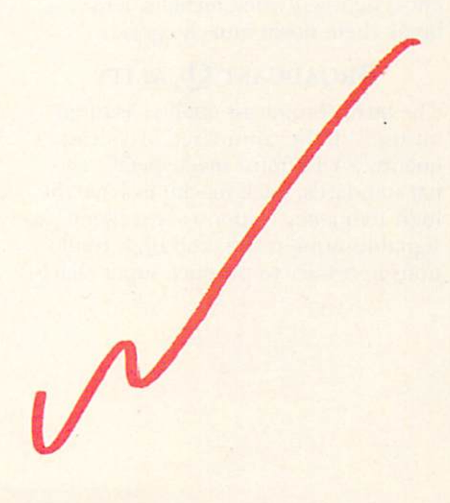
Finally, the "wood" texture is a result of that unconventional use of Director 2 outlined earlier for creating a random screen. In this case, though, put constraints on the randomness. For example, the statement ?2-1 randomly yields 0, -1, or +1, which can then be added to the previous Pen color before drawing a new point. Each new pixel drawn on a line will thus be the same value as the last pixel drawn—one shade darker or lighter. This produces lines in which pixels randomly but smoothly rise and fall in value. Each line, however, is unrelated in value to the lines above and below it, which creates an illusion of real wood grain. You should then blur or average the screen at the final stage, just before adjusting the palette.

You can produce any of these custom textures in just a few minutes. Endless variations are possible, thanks to the insight of software designers who allow Amiga artists to combine the tools of art and science. ■



All of the textures above were created by hand, using simple combinations of painting and image-processing techniques with DeluxePaint IV, Director 2, PIXmate, Art Department Pro, and Imagemaster.

Joel Hagen's credits include work in art, astronomy, science fiction, and software development. Write to him at 10512 Sawyer, Oakdale, CA 95361. Please include a stamped, self-addressed envelope for a reply.





Formats Figured

Befuddled by the array of videotape and machine formats? You're not alone. Here's a look at each type, with some tips to help determine which is best for your purposes.

By Paulo de Andrade

VIDEO TAPE RECORDERS have become steadily better and more accessible every year. A whole family of professional VTRs is now available for a fraction of the cost of their broadcast-quality predecessors. Even some consumer decks allow basic editing at reasonable prices.

While equipment is readily available, however, video is not the same for everyone. Manufacturers, seeing huge potential in the growing videography market, have come out with many video formats. This competitiòn extended from the famous consumer Betamax versus VHS to the broadcast world with Betacam versus M-II. Although prices have dropped as a direct result of this struggle for dominance, we now have a confusing array of formats from which to choose.

Is digital better than analog? Is Super-VHS broadcast quality? Can you single-frame record an animation on a home VCR? These are questions I hear all the time. To understand the differences between video formats, let's break them down into categories.

Broadcast Quality

The term "broadcast quality" is often misused. To be considered broadcast quality, a VTR must meet specific signal standards. Such machines have the high-frequency responses, excellent signal-to-noise ratios, and high resolutions necessary to produce super sharp, stable video and accurate, pure colors.

But broadcast-quality machines also differ from others in the way they are built. They must withstand abuse of all sorts: from frenzied editors shuttling back and forth to finish their pieces minutes before airing, to continuous 24-hours-a-day, seven-days-a-week operation, and so on. Therefore, broadcast-quality VTRs have tough mechanisms and cases made from metals that make them strong and provide sufficient rigidity so that moving parts meet precise tolerances. To meet the repair speeds necessary for broadcast situations, the circuits of broadcast-quality VTRs are on easily-removable boards, and the cases are easily disassembled.

Broadcast-quality VTRs incorporate the latest production technologies: they are frame-accurate, have many audio channels, and are easily connected to other pieces of equipment. Their components are of the highest grade available, and each unit is individually adjusted at the factory to meet strict broadcast standards. For all these reasons, broadcast-quality VTRs are the most expensive, ranging from $15,000 to over $100,000. This group of machines is divisible into two categories: digital and analog.

Digital

The main advantage of digital video lies in the fact that every generation (that is, every copy made) loses very little quality. It is, therefore, the perfect format for image compositing and multigeneration post production. There are currently three digital video formats:

D1: Introduced in 1986, this "king" of all formats is component digital, designed for use in a completely digital environment. Being component, it separates the most important video signals to keep the image quality at its best. It does not use the composite video signal, which, by mixing all video signals into one, has some imperfections. A D1 machine has four digital-audio tracks and separate longitudinal tracks for SMPTE time code, control track, and cue audio, and it contains 12 video heads. It uses metal-particle videotape encased in small, medium, and large cassettes.

D2: Although this format uses composite video, as with all broadcast formats, the quality is so high that composite does not make a big difference. Introduced in 1988, D2 is not totally digital. The inputs and outputs of a D2 machine are analog, and it digitizes video and audio signals in real time. This makes it easy to integrate D2 machines into existing analog video systems. A D2 machine contains six video heads and uses videocassettes similar to those of D1, but with a different metal-tape formulation. ►

D3: Introduced in 1991, this new digital format is gaining wide acceptance because of its excellent price/performance ratio. It is a composite video format like D2 and uses 1/2-inch metal tape. It is also very easy to integrate into existing analog video systems.

Analog

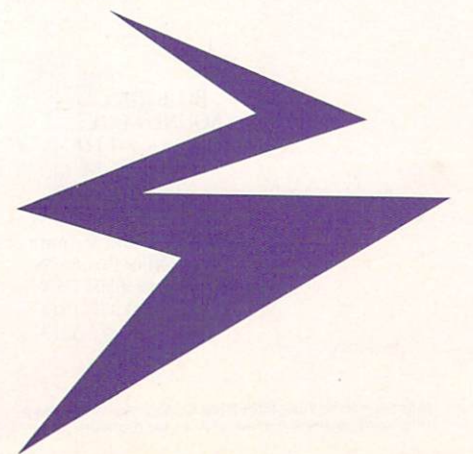
Analog VTRs have been around since the first videotape recorder was introduced. The best analog machines produce first-generation pictures equal in quality to digital VTRs, and they are much more widely used than digital machines. There are several different analog formats:

One-inch Type C: Introduced in 1978, 1-inch Type C format was for years the high-quality video standard. Just like an audio reel-to-reel recorder, it uses 1-inch oxide tape in reels, replacing the older 2-inch VTRs. It was the first format to allow viewable still-frames, slow and fast motion, and picture-in-shuttle. This composite-video system uses three video heads and still delivers pictures of very good quality.

Betacam: Introduced in 1982 as the first component-video system, Betacam was designed around the consumer Betamax format. It records the luminance and chrominance signals on separate tracks optimized for those functions, using 1/2-inch oxide tape and six video heads.

Betacam SP: Introduced in 1987 as an improvement over Betacam, this component-video format uses thin metal tape to achieve longer playing time and increase the bandwidth. Betacam SP videotape comes in small and large cassettes; the small size is compatible with standard Betacam. The SP decks have six video heads.

M: Introduced in 1982, this format is an upgrade to consumer VHS. It uses 1/2-inch oxide tape on VHS-size cassettes. It is a component system, like Betacam, but processes the signals differently. M also uses six video heads.



M-II: This format was introduced as a major upgrade to the M format. Making its debut in 1986, it uses thinner metal tape to allow fine picture quality and record/play times up to 90 minutes. M-II records chroma signals using time-compression multiplexing. It uses small and large cassettes and has ten video heads.

Professional Quality

While professional formats produce very good pictures, they do not meet current broadcast standards. That does not, however, rule out their use in small TV stations or for cable. The main advantage of professional-format machines is price, which starts at $3500. One of the main disadvantages, compared to broadcast-quality VTRs, is the widespread use of plastic parts in the mechanisms, which leads to less image stability and reliability. Also, professional VTRs usually do not have easily removable circuit boards, thus requiring more work to fix electrical problems than do broadcast VTRs. Some low-end professional VTRs do not support frame-accurate editing and simply cannot be used for animation. All five professional formats are analog:

Three-quarter-inch U-Matic: Introduced in 1972, this became the first practical format for news gathering. Considered broadcast quality until the early 80s, U-Matic became the standard format for industrial production and still has a broad user base. Its dual-head format is considered highly reliable; it uses 3/4-inch oxide tape housed in small and large cassettes.

Three-quarter-inch SP: This format is basically the same as regular 3/4-inch, but it uses metal tape for better image. Introduced in 1985, it uses tapes that are compatible with regular 3/4-inch U-Matic format.

VHS: Introduced in 1975, VHS is the most prevalent consumer format. Although there are professional VHS VTRs, the quality is the poorest of all professional machines, and they should be used only for duplication purposes or low-quality work. Machines equipped with hi-fi audio deliver excellent sound. Cassettes can be large or small (VHS-C).

S-VHS: S(uper)-VHS was introduced in 1987 as an evolution of the VHS system. It uses a modified oxide tape formulation and separates luminance/chrominance signals to achieve better image quality. VHS tapes can be played on S-VHS decks, but the reverse is not true. Newer S-VHS machines have much-improved picture quality due to better tapes and noise-reduction circuitry. It is becoming the new standard for industrial video production and offers very good quality for the money.

Hi-8: The smallest video format, Hi-8 was introduced in 1988 and became very popular in compact camcorders. Because of their small size, Hi-8 recorders are often used for shooting footage when large machines would get in the way. Gulf-war news people used Hi-8 machines because they passed as tourist home cameras. Although the strength of this format lies in acquisition, there are now Hi-8 editing systems and frame-accurate VTRs. The 8mm metal tape is housed inside very small cassettes that fit inside a shirt pocket.

The Format Formula

With so many formats to choose from, how do you know which is right for you? Mainly, your budget will tell you, although there are other things to consider. If you want to record 24-bit animations to tape, a frame-accurate VTR is a must. If most of your work will be weddings and low-budget industrial/corporate productions, you should definitely stick with professional VTRs. The lower cost will keep you profitable, and you can also use them for local television commercials if you do not go down too many generations. On the other hand, if you want to produce for network television, do high-end 24-bit animations, or generate MTV-quality music videos and commercials for big companies, you must go with full broadcast quality.

Most important, make sure you know what you are doing. If you do not have professional video experience, take some courses before you try to make a business of it. Having even the best equipment is fruitless if you cannot make good use of it. ■

Paulo de Andrade is president of a broadcast-quality production company that uses Amigas. An eight-year network-television veteran, he has six years of experience with computer animation. Write to him at Kinema Graphics, 13800 SE 79th Dr., Renton, WA 98059.



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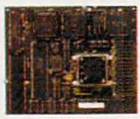
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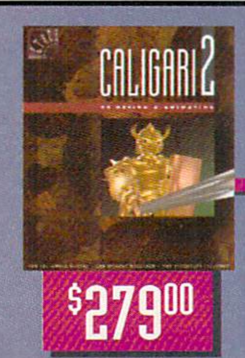




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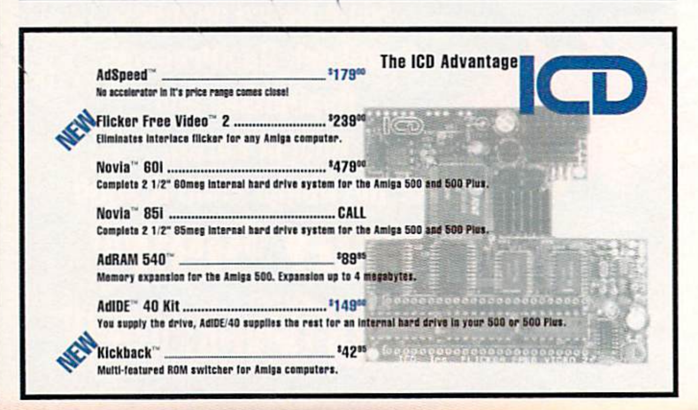
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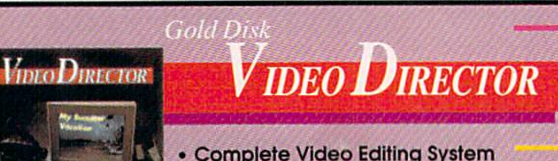


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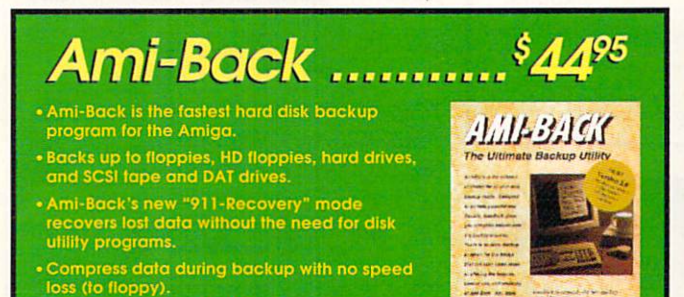
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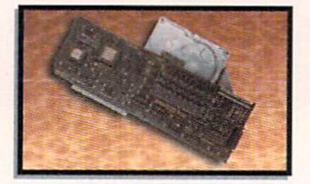


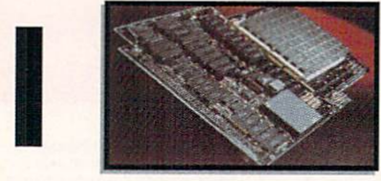




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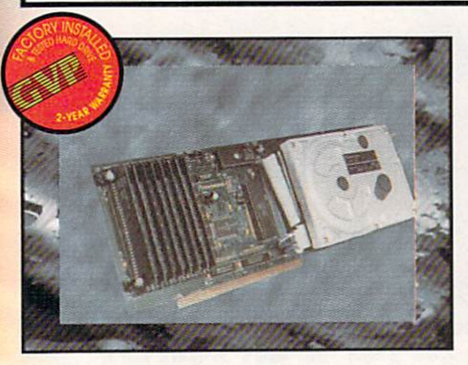
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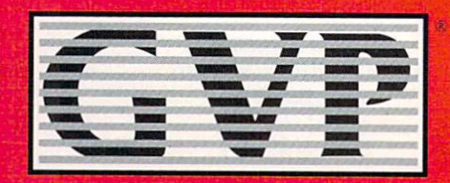
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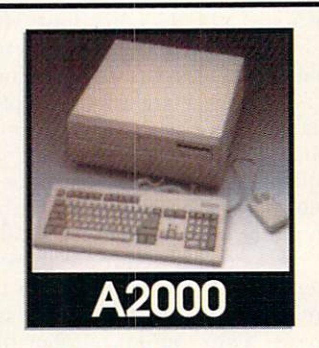
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From p. 28.

er on the Amiga. On the other hand, Kindwords 3 is simply a scaled-down version of Digita's Wordsworth word processor. Despite the claim that it is "the most powerful word processor for your Amiga," Kindwords 3 lacks some of Wordsworth's features and includes a special upgrade offer in its box.

On its own, Kindwords is a fairly complete entry-level word processor. It sports a unique left-hand toolbox that handles most of the tasks (such as font control and paragraph formatting) usually relegated to a ruler atop the screen. A help icon also produces an on-line guide to the program's features.

Two major format requesters, Paragraph and Page Layout, control the appearance of the final document. The Paragraph requester lets you select line spacing. You may specify line height as six or eight lines per inch, automatic (adjusts to the selected font), single, double, or custom spacing specified in points. You can also tell Kindwords to skip an extra line before or after each paragraph, and you can mix styles throughout the document. The Page Layout requester lets you specify page size and margins.

Headers and footers are shown on screen, and they may be different on opposing pages. If you like, paragraph symbols may also be visible. Have you ever wanted a vertical ruler to complement the standard top-of-page model? Kindwords accommodates, letting you measure how much paper you have consumed. Unfortunately, the ruler is not precise enough for accurate positioning work, as there is no zoom control.

As you might expect, Kindwords offers the ability to insert numerous things in a file, such as page breaks, the date, and the time. Depending on your preference, Kindwords inserts the current date and never changes it (useful for reference documents) or updates the date every time you load the document (useful for form letters).

Kindwords also includes the requisite spelling checker and thesaurus, and you can easily add your own words to the user dictionary via a convenient module right in the program.

Strong Suits

Two areas in which Kindwords has a distinct advantage over excellence! are graphics and printing. Kindwords allows you to place graphics anywhere in a file and contour text around them via a simple requester. This is in stark contrast to excellence!, which treats pictures as alphanumeric characters, severely limiting their placement in a document.

In addition, Kindwords was designed to optimize output for dot-matrix and other low-resolution printers. Kindwords can produce high-quality output using standard Amiga fonts if you have double- or quad-sized fonts available. For example, suppose you are printing a file with 15-point fonts. If there is a 30- or 60-point version of the same typeface in the fonts drawer, Kindwords scales down the larger font and prints with it instead, getting a better result than is possible with the size actually selected.

Kindwords has its share of idiosyncrasies, as well. With over three megabytes of memory available, I was unable to open more than two documents simultaneously, even though I couldn't find anything in the manual about the maximum number of files I could open at once. Also, as far as aesthetics go, I found the Kindwords ruler and toolbox to be a tad ugly and a bit large, even in high resolution.

Despite the fact that Kindwords is a simpler word processor than excellence!, I couldn't shake the impression that it was, in fact, somewhat more difficult to use. Kindwords has all the basics, but lacks many of the amenities a seasoned typist looks for in a word processor. excellence!, on the other hand, is in a close race with New Horizon's ProWrite 3.2 for the best of the best.

—Dave Johnson

Virtual Reality Studio

***Domark/Accolade*, $89.95.**

Hard-drive installable.
Not copy protected.
2.0 compatible.
Accelerator compatible.
Minimum system: 512K RAM.
Recommended system: 1MB RAM, hard drive, accelerator.

3-D game creation.

Easy to learn, easy to use, and fun to just play around with, Virtual Reality Studio (VRS) is a wonderful tool for building scrolling, filled-polygon adventure games. With a little ingenuity on your part, the results will look great.

The expression "virtual reality" gets tossed around as much for games these days as "multimedia" does for applications. VRS actually pre-dates the concept. This is an improved edition of the Freescape system used by England's Incentive Software to create such commercial first-person adventures as Total Eclipse, Space Station Oblivion, and Castle Master. (A side note: All these games are now out of print in the US, but Domark's European division has released Virtual Worlds—a compilation of the three plus Castle Master II: The Crypt. It's an excellent collection, and bound to give you some bright ideas.)

Better than Legos

Difficult to imagine creating one of these on your lonesome, eh? Well, it is now within reach. Starting with just a green field and blue sky, you use plain-English icon- and menu-driven commands to create eight basic shapes—from a cube to a pyramid to a straight line—in the playfield at the top half of your screen. You can color them, stretch them, shrink them, move them, turn them, connect them up in complex objects, and roam among them to ensure the fit is just right. A cube flattened and lengthened becomes a wall. The copy command creates another. (Just push the copy over to the right with the move buttons.)

A second clone, pivoted with the turn command and shrunk to fit the gap, becomes the back, and a pyramid, with a little jiggling, forms a little peaked roof. Nice garage, eh? Time to get started on the car.

And so, area by linked area, your environment grows. You can add animation and up to 32 sampled sounds—the program comes with six pre-defined ones (but, alas, no music support).

The BASIC-like Freescape Command Language (FCL) permits you to set up conditions and variables for interacting with this world within your Amiga. You can use your paint program to create a custom IFF border that frames and provides the controls with which you will run your program (or use the two that come with the program). And, finally, you can create a stand-alone game that runs independently of the creating program. (In England, the public-domain and "licenseware" market is already sporting some very stylish VRS games.)

VRS doesn't make you work that hard. The program has multiple perspectives that make it easy to center one object on another. There's a coloring utility that doesn't require each side of a given object to be visible for clicking. (You merely click on the appropriate patch beside the palette.) If you get tangled up in your architecture, you can quickly bounce back to your starting perspective. And while there's some programming to do—the more the better, actually—it's very much of the "if X and Y, then Z" variety.

It's easy to understand why this product, upon its initial release in England,

Continued on p. 76.

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From p. 72.
was called 3D Construction Kit. That's exactly what it is, and the studio analogy


Your imagination can blast off in three dimensions with Virtual Reality Studio.

works as well: You can jam with Virtual Reality Studio without a fixed idea in mind, then take off on a theme when you hit the right note, whereas a language such as Aegis Visionary requires advance planning. It's the first real game kit since Electronic Arts' ancient Adventure Construction Kit. (Another, Interplay's Bard's Tale Construction Kit, may be available by the time you read this.)

Stray Parts

Most of my complaints, such as they are, are little picky ones. The file requester is awkward; on my Amiga 500 (but not on the A3000), the program always accesses df0: the first time it loads data from disk, rather than detecting (or asking me for) the device in which it resides. FCL could use a set of macros. The hard-disk installation program looks for a missing .info file to create the program drawer, and you'll have to make it yourself. (Then again, just when you think the age of creative Amiga icons has passed, VRS throws up a cute one.) The program does not seem to multitask, but also doesn't take over the Amiga, and on a three-megabyte machine, I was able to keep other programs comfortably in memory with no evident effect on VRS's performance.

While very speedy and smooth on a 25-MHz A3000, movement within VRS games is a bit slow and jerky on 68000-based machines compared to more recent games in this genre, such as U.S. Gold's Cybercon III. The program's repertoire of shapes is understandably limited to those consisting of straight lines. (For instance, it can create a hex, but not a globe, cone, or cylinder.)

The docs are a bit two-dimensional. The 78-page manual is very solid when it comes to explaining the commands, and has a nice tutorial on creation of the excellent sample game, but it is rather lean on tricks and shortcuts. The introductory video included with the package may help you get started, but it's more like an in-store info-mercial than a real user aid. (Note to Domark: You could really use a Virtual Reality Studio Handbook here.)

Also, I do think that a program so clearly designed as a construction kit could behave a bit more like one. The manual cover and the video are full of stuff that appears nowhere in the program. How about a data disk of pre-fab objects and generic scenes to edit or cut and paste with your own? VRS comes equipped with only the 15 or so scenes from the sample game, and the object library consists of a helicopter, space shuttle, and a palm tree. That might be OK if you were building an adventure about a pilot on vacation, but it's rather thin for the novice feeling his way around. Otherwise, this 3-D game maker is 1A by me.

—Peter Olafson

Expert 4D Jr.

Genisoft, $75.

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Not copy protected.
2.0 compatible.
Accelerator compatible.
Minimum system: 1MB RAM.
Recommend system: 3MB RAM, hard drive.

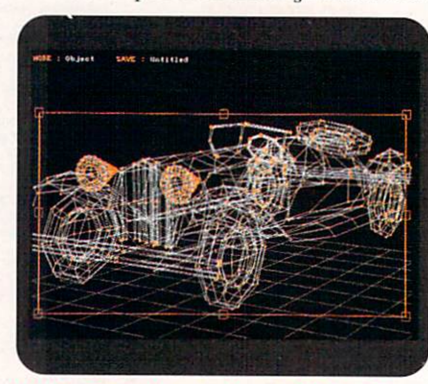
Beginner 3-D modeling and animation.

A streamlined version of Expert 4D (currently available in Europe), Expert 4D Jr. (E4DJr) is designed for beginning users of 3-D modeling and animation software.

E4DJr is made up of three modules. The Modeler is the main section of the program, wherein you create all the 3-D objects, assign them attributes, and build animations. The Renderer draws the images and animations, and the Playback lets you view your completed animation.

To begin work, you enter the Modeler, which provides a view of 3-D space from the camera, or observation, point. If you prefer, you can change the view to look at the front, top, or side of your scene. The Rotation and Zoom commands further alter the view. With these, you resize or rotate a bounding box in the scene to establish a new viewpoint. The orientation of the scene can also be specifically defined by entering coordinates in a dialog box. All the methods are very intuitive and simple to use, making it easy to create and edit scenes.

You have a choice of object-creation methods in E4DJr, as well. You can generate primitive shapes (spheres, cubes, cylinders, and so on) by specifying the number of points in the object and then


While simple to use, Expert 4D Jr. lets you create complex objects.

editing them. Alternatively, you can use the Extrusion and Spinning functions on a separate screen consisting of a grid of dots. After placing and adjusting points on the grid in the shape of your object, you extrude or spin the shape. If you extrude, the program adds a user-specified depth or thickness to the flat outline. If you choose the Spin option, E4DJr spins the outline around a vertical point you define. Spin is helpful in designing symmetrical shapes, such as vases. You can even create cutaway objects by spinning your shape less than 360 degrees.

Back to the Modeling Board

Objects appear on the modeler screen in wireframe mode. When you click on an object, it becomes surrounded by a box with eight handles, three of which alter the object's size and five of which control the object's rotation along the three axis dimensions. Clicking and dragging these handles allows for visual scaling and rotation of the object on the modeler screen. For more exact adjustment, you can also control the size and rotation through separate panels. The one problem with using the handles is that they look exactly alike, so it is difficult to remember which handle does what when you are learning the program.

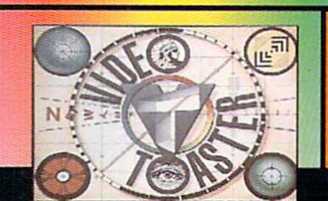
You can edit objects in other ways, as well. For low-level changes, you can alter them on a line-by-line or point-by-point basis. The Magnet tool attracts points in the object to the spot where you place the magnet, while the Mirror function lets you create an exact opposite of your selected object. To build a complex structure, you can join objects together, and then assign a color and texture (the latter controls how much light the object reflects). If you change your mind, the Undo function cancels the last edit. When

Continued on p. 80.

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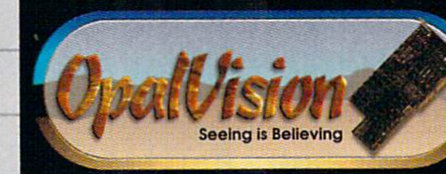


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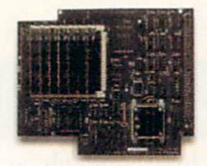
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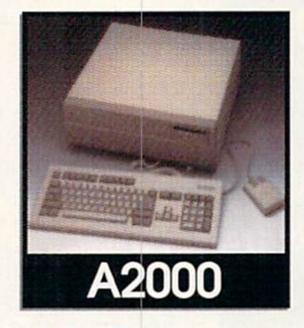


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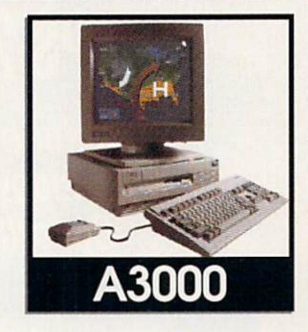


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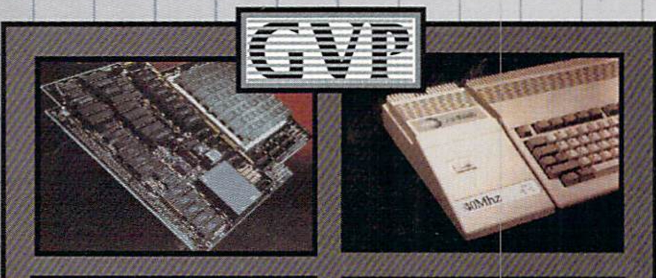
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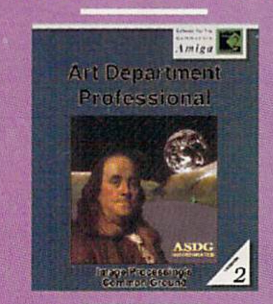
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From p. 76.
the objects are finished, you can save them in either E4DJr or Sculpt format.

Each scene may have up to ten lights, all with user-definable color, intensity, and aperture size. The light object on the modeler screen looks like a stage light, and the direction and size of the illuminated area is defined by a series of lines emanating from the light. This is a great feature, making it very easy to position your lighting.

To put your scenes in motion, E4DJr uses the key-frame method of animation. You place the objects in their initial positions for the animation, and then select Animate Scene to indicate the first key frame. To make other key frames, simply change the scene and save it. The program interprets the movement between the frames, giving a smooth animation when rendered. You can save as many key frames as you need, and E4DJr makes it easy to add, delete, and modify them.

Once satisfied, choose the Renderer module to generate the finished product. The software supports all standard Amiga resolutions, with image size ranging from postage stamp to full overscan. You can render in wireframe, polygon, or, for best quality, pixel mode, and even add background and foreground pictures. E4DJr does not ray trace, so it generates images at a reasonable speed even on unaccelerated machines.

Because E4DJr does not render 24-bit graphics, DCTV support would be a welcome addition (as would the ability to preview animations in the modeler). When your animation is complete, you can view it with the provided player program or any program that plays animations.

Explain It Again

The only weak spot in E4DJr is the manual. It does a barely adequate job of covering the program, is not well organized, and is written in a confusing and sometimes irritating style. Moreover, the documentation contains very little information on the basic concepts of 3-D modeling and animation that are vital for the beginners whom E4DJr targets.

Otherwise, E4DJr is a great introduction to the world of 3-D animation. The program is reasonably fast on unaccelerated systems and is very stable. E4DJr is also easy to use and does not confuse the novice with a multitude of advanced features. In addition, it has features—such as the abilities to see the scope of your lighting and to save the object in a common format—that are not available in many higher-end 3-D programs. Even better, the price of the program is much lower than that of its nearest counterpart. If you are interested in learning about 3-D animation, take a look at Expert 4D Jr.

—Dave Thomas

BoomBox

Dr. T's Music Software, $59.

Hard-drive installable.
Not copy protected.
2.0 compatible.
Accelerator compatible.
Minimum system: 512K RAM.
Recommended system: 1MB RAM, audio amplifier and speakers, hard drive.

Simple interactive music-making and entertainment.

It's one of those long, hot summer nights, and you've got the urge to kick out the jams a bit. Reach for BoomBox; it will put some strut in your stride. Billed as providing "interactive fun with music," it fulfills the promise exactly and admirably. BoomBox's metaphor is the tape deck and mixer. With one of three control screens, you can play back four virtual tracks of music using only the Amiga's internal sounds, controlling volume and adding sound effects. You can then record the result as a virtual mixdown.

The opening screen is an animated portable cassette player, complete with moving cassette tape, LED meters, and speakers. To make them pulsate, load one



BoomBox's Remix screen lets you be the DJ at the mixing console.

of the supplied mixdown files, a set of four pattern tracks for drums, bass, synth, and solo, with six IFF samples for effects. A volume slider controls the playback level of each track, and transport controls start, stop, pause, fast-forward, and rewind the mix. If you like the results, you can record and save the playback mix.

The Remix screen has all the features of the first and adds a few additional control possibilities to the mix. Its metaphor is a DJ's mixing console, giv-

ing you control over playback tempo and effects samples. Solo pads let you load, control, and trigger individual effects and, of course, record the resulting mix. From the Remix screen, you can also monitor which of the four patterns per track are playing, trigger the current measure again, or set it to loop.

The final screen, Jam, has all the possibilities of Remix and adds the ability to interactively change the patterns that play in each track. This is the deepest control the program offers. You cannot record new patterns or alter the supplied ones, although there are a lot of permutations available. The on-line help clearly explains every button, fader, and option (it should be a model to other developers).

There are a surprising number of musical variations you can make with BoomBox; it's a natural tool for making quick soundtracks and spotting in custom sound effects. For musical entertainment, it's...well, entertaining. I wonder, though, how long the limited range of BoomBox's musical palette will hold a user's interest. The fact that you cannot create new patterns or vary the style is a severe limitation, as is the lack of connection to MIDI devices. If BoomBox added these capabilities, it would be a useful creative tool, instead of merely an enjoyable toy.

—Michael Hanish

PERSONAL VDA

Digital Processing Systems, $150.

A2000, A3000.
Internal; IBM or Amiga slot connection.
Installation: Easy.

Distributes a single video signal to multiple devices.

BREADBOARD

Cardinal Video, $398.

A2000, A3000.
Internal; PC-slot and Video-Toaster connection.
Installation: Difficult.
Compatibility notes: Requires NewTek's Video Toaster.

Delays video for downstream switcher/keyer and limited video distribution requirements.

Even if you're not a video professional, you've seen the problem. You split your incoming cable so it reaches several TV sets in your home, but the resulting picture quality is not very good. A video signal is more like water than electricity: Split it several times, and, as with water in a pipe, you'll get that much less through each pipe. In video terms, that means the signal strength diminishes enough to seriously affect the overall picture quality.

A distribution amp (DA) solves this problem. It splits the video signal several times, but boosts the signal strength so that each is as good as the original. This is useful when you want to simultaneously record an image to video tape and view it on another monitor; make multiple copies of a tape using several recorders; send a genlock reference signal to several devices; or simply add more program outputs to the Video Toaster. As you'll see, the two internal DAs available for the Amiga have quite different uses.

PERSONAL VDA: VIDEO BOOSTER

The Personal VDA (video distribution amplifier) comes in two models. The VDA-1000 fits into an IBM slot so you can use it in a PC or an Amiga, while the VDA-1050 plugs into an Amiga slot. Both versions provide four 75-ohm terminated outputs from a single PAL or NTSC source. The input is ac-coupled and fed to two separate video amplifiers, both of which provide two video-out BNC connectors for a total of four outputs. With the rear control, you can adjust each bank of two for a gain range of ± 2dB. The termination switch is also on the rear of the board, so you don't have to open your computer for simple adjustments.

If you already have a heavy power-supply load from other internal cards and can't get enough –12 volts dc, the board adds a positive dc offset that cuts the –12 load by half, although it increases the +12 load by 40 mA. You would turn this off only if other equipment is affected by it, and it should help reduce power-supply problems. You can also switch to –5 volts dc. What this all comes down to is that the Personal VDA has a much better chance of operating in your machine when you have a lot of other cards installed.

The downsides to having a VDA inside your computer are that it occupies a valuable slot and that you have to reach behind the computer to plug and unplug cables. The big pluses are low cost and compactness for small studios.

BREADBOARD: TOASTER DELAY

If you have a Video Toaster, you may want to take a look at the Breadboard. While it is not designed to be a general-purpose DA, it does have some DA capabilities. Its primary function is as a delay line, and it takes strong advantage of the fact that it is plugged inside the Amiga and cabled to the Video Toaster's JP2 connector.

It gets its video signals directly from the Video Toaster, passing Toaster input signals through to its own output. BNC D is always Program output, and BNC E can be either Program output or Preview. The maximum number of outputs from a single signal is three (Toaster Preview, and BNCs D and E set to Preview), so you could distribute a signal to three devices.

The other three channels have a somewhat different use. The Toaster takes time to do what it does, introducing a 440-nanosecond delay. If you have a switcher or other device connected to the Toaster output (in video terminology, it is "downstream" of the Toaster) and you want to mix it with other incoming video, the signals will be out of sync with each other.

The traditional solution is to add delay lines that delay the other video signals so they arrive at the same time as those from the Toaster. This is the purpose of the other three outputs, which take the video from the Toaster inputs, amplify them, and allow you to add a delay, adjustable from 25 to 525 nanoseconds. You can then connect them to your downstream switcher and everything will work together (assuming that all of your cables are the same length, as even the trip down a cable can add some delay).

The unit comes preset for input 4, key insert, and alpha channel as the three outputs. The alpha channel provides matting capability for high-quality keying with an external switcher/keyer; simply connect the second provided cable to the Toaster's JP1 connector. Besides preserving the quality of the background video in keys, this opens up the options of interesting mix effects with three pictures on the screen at once, multiple keys, and multiple dissolves and wipes.

Preset is an appropriate term in several ways: You must configure the board the way you want it before installation, and it is not adjustable once installed. All of the settings, including unity gain, are directly controlled on the board via small potentiometers that require a tiny screwdriver or tweeker. You must power down and open up your computer to change anything.

WANTED: MORE EXPLANATIONS

My only complaint is one that I have with most Amiga video peripherals: very poor documentation. While the Personal VDA manual is sparse, at least it provides the minimum of information you need to get started. The Breadboard, however, is a more complicated device, and its few photocopied pages of documentation are worse. They tell you that you can select which Toaster inputs you want to delay, but not how to do it. If you want to

Continued on p. 84.

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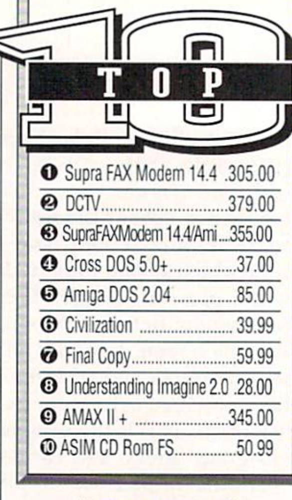
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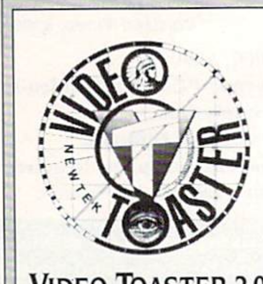
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NEWTEK INCORPORATED

From p. 81.
change the factory settings, you'll wind up giving Cardinal a call, only to find out that you have to send the board to the factory to have the changes made.

The documentation does not even include a diagram showing where all the adjustments are, although you can find most of them by the markings on the board. It also assumes a high degree of video sophistication; a few explanatory sentences about many of the features' functions would make the Breadboard much more accessible to video neophytes.

Documentation aside, both the Personal VDA and the Breadboard do the job well and represent good value.

—Geoffrey Williams

ExpertDraw

***Genisoft,* $99**

Hard-drive installable.
Not copy-protected.
2.0 compatible.
Minimum system: 1MB RAM.
Recommended system: 1MB RAM.

Entry-level structured drawing.

ExpertDraw should be a good program for a newcomer to structured drawing. It has an extremely concise, easy-to-follow manual to help you along, and the program itself has the clean, contemporary look of AmigaDOS 2.0.

Most of ExpertDraw's drawing procedures are fairly typical of structured drawing programs. For example, when drawing curved lines, you can hold down the Shift key to freeze the curve of your upcoming line segment in place, while you continue to adjust the curve of your current line segment. In this way, you can create corners in your curved lines while you are drawing them. This is the same procedure used in Professional Draw, but ExpertDraw actually explains in its manual that you can do this.

ExpertDraw departs from the norm, however, in its procedure for importing bitmap references to trace. It converts bitmaps to Aegis Draw format, offering various options to retain as much information as possible from the original bitmapped image. It does a good job, but the procedure takes some time, and some of the details of the bitmap will be lost.

The program does have the feel of being "rushed out the door" a little too soon. When you zoom in past the borders of a polygon, the polygon's fill color completely disappears. The Polygon Connecting and Polygon Closing tools neither connect nor close polygons: They simply



For an introduction to structured drawing, consider ExpertDraw.

superimpose the end points (although they do that very well, and that can be sufficient for most purposes). Scaling objects by dragging with the Size tool worked well enough, but I had trouble scaling with the Size Coordinates requester. In addition, you cannot specify line joins (mitered, beveled, rounded, and so on) at present. Genisoft says that this omission will be addressed in the next release.

ExpertDraw also promises flexibility now and for the future. Currently, it can import and export Professional Draw clips. It does this very well, and, in fact, saves them much more quickly than does Pro Draw. The manual also promises an ancillary product that lets you use PageStream fonts with ExpertDraw.

Overall, ExpertDraw has a very solid feel and performs operations very quickly and efficiently. I hope its little problems are indeed fixed in the next release. With that boost, it could be an excellent introductory structured drawing program, and it's succinct, well-ordered manual is exemplary.

—Jim Silks

Animatrix Modeler

***duBois Animation,* $99.95.**

Hard-drive installable.
Disk-based copy protection (nonprotected version: $10 more).
2.0 compatible.
Accelerator compatible.
Minimum system: 1.5MB RAM.
Recommended system: 3MB RAM.

Basic 3-D modeling in user perspective.

While it lacks a rendering module, Animatrix Modeler (Version 1.021) may be a low-cost solution if you want to design in perspective mode rather than plot points in the traditional three-window format.

In addition to creating objects, the program loads and saves objects in Turbo-Silver, Sculpt-4D, VideoScape 3-D, and its own format, so you can use it as a format converter in a limited manner. Unfortunately, however, Animatrix does not provide a method for applying surface attributes. When you convert an object, it loses all its surface characteristics. Thus, if you use this program to convert any public-domain objects or those created elsewhere, you must load and reapply surface colors and textures in your rendering program.

You control the program through layered menus on the bottom of the screen, which you can toggle on and off with the Escape key. This may seem convenient; however, almost all functions must be accessed via the menus, including exiting specific selections.

Keyboard equivalents are implemented in a very unconventional way. Each key from the z through the comma represents a menu selection from left to right. This means that you must still work your way down and back through the menu layers, and if a new version changes or adds menu items or layers, the keys you are accustomed to using will change function. You can change your viewpoint (camera view) at any time using the cursor keys and the numeric pad cursors without changing functions.

Animatrix has a curious mix of features. For example, while the modeler does not have common functions such as lathe or specified-length extrusions, it does have point and edge extrusions, a function available only in better programs such as Caligari2 (Octree) and Animation Journeyman (Hash Enterprises).

Unfortunately, Animatrix currently does not support numeric input or an undo feature. The response and screen redraws are very acceptable; I experienced slight trouble with redraws only after pressing the cursor several times. The menu buttons are designed to provide a 2.0 look and feel, but the program locked up my machine repeatedly while running under AmigaDOS 2.04. The developer has promised to add major features, including on-line help and X-Specs glasses (Haitex Enterprises) support, in the next version.

Currently, I cannot recommend this program as a replacement modeler for any serious 3-D designer. I can, however, see Animatrix Modeler as an additional tool for working on objects in perspective mode (highly desired by some designers) or as a starter kit for those interested in trying 3-D design without investing several hundred dollars.

—Steven Blaize ■

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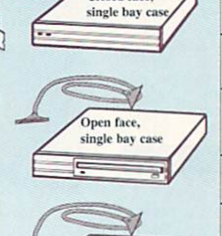
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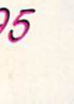
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HELP KEY

Don't sell your old system for pennies; give it away to charity and get a nice tax deduction.

By Louis R. Wallace

Your Old System May Help Those in Need

Q. *I have been thinking about upgrading my Amiga 1000 to either a new A3000 or perhaps one of the rumored new machines Commodore is supposedly planning to release this fall. So I have been checking out what I could get for my 2.5 MB A1000, and sad to say, the going rate is pretty low, especially when you consider what I paid for it when it was new. So instead of selling it, I was thinking of making a donation of it to a worthy cause. I'm writing to ask if you know of any charities or groups that are interested specifically in Amigas. If so, I would like to contact them about my system.*

James Orville
Miami, Florida

A. James, there are a great many organizations who would love to have your Amiga. Many of them qualify as charities, and your donation can be used as a tax deduction, possibly giving you a better return than actually selling the computer.

I recently got some information on a not-for-profit organization called the National Cristina Foundation, which accepts the donation of used computers for disabled or economically disadvantaged people who might not otherwise have access to using and learning about computer technology. The organization accepts both computer hardware and software donations and is willing to supply documentation on your donation for use with the IRS. You can reach the Foundation at the following address, or by calling its toll-free number.

National Cristina Foundation
42 Hillcrest Drive
Pelham Manor, NY 10803
(800) 274-7846
(914) 738-7494

Another organization is called the East West Education Development Foundation. This group promotes freedom and world peace through information exchange, which they accomplish by recycling computers, networks and modems. Through the donations of individuals and corporations, they send new and used computers to educational institutions all over the world. For more information, write to them at the following address.

East West Education Development Foundation
49 Temple Place
Boston, MA 02111
(617) 542-1244
(617) 542-3333 FAX

Sometimes you discover a group in need through your personal life. Through my work at AmigaWorld I met a gentleman by the name of Don Scott, an animator and modeller who did a number of jobs for our Tool Chest disk series. As Don and I worked together, we became friends, and one of the things I learned about Don is that he has an illness called Amyotrophic Lateral Sclerosis, or ALS for short. This disease, which is often called "Lou Gehrig's disease," is what the famous physicist Steven Hawkings suffers from. It is a progressively fatal neuromuscular disease that attacks nerve cells in the brain and spinal cord.

One of the worst things about ALS is that victims often are no longer able to write and speak, many times losing the ability to communicate with people around them. For them, a computer like the Amiga is a blessing, because not only can they write by typing at the word processor, but the machine can also be used to speak for them (using the built-in speech synthesis). There are a number of ALS support groups around the nation, and they would love to have the use of your older Amiga computers. For information, you can contact Don's local group, who will help you find an ALS chapter near your home. Write or call:

Laura Henley
The ALS Association, Tampa Bay Chapter
P.O. Box 22314
Tampa, FL 33622-2314
(813) 875-4097

2.04/1.3 and Booting

Q. *Help! I just got the AmigaDOS 2.04 upgrade for my A2000. I also got a Switch-It board that lets me select between the 1.3 and 2.0 kickstart ROMs, and I installed 1.3 on one hard disk and 2.0 on another. Both hard disks are set to autoboot. The problem is that when I boot under 1.3, I get an error message ("This disk requires kickstart version 2.0 or greater. C:setpatch failed return 20."). What do I need to do to get the system to boot under 1.3?*

Chris Henschen
Bowling Green, Ohio

A. The easiest way is to check to see what version of kickstart you booted with. Here is a simple test you can do using the VERSION command within your startup-sequence.

```
; S:STARTUP-SEQUENCE
VERSION >NIL:
LIBS:VERSION.LIBRARY=37.67
IF WARN
  ECHO "NOT 2.04"
  EXECUTE S:START1.3
ELSE
  ECHO "YEP. 2.04!"
  EXECUTE S:START2.0
ENDIF
```

The first thing to do is change your 1.3 hard disk to non-autoboot mode. You only need one drive to autoboot. Then use the above as your startup-sequence. Make a separate startup-sequence for the 1.3 and 2.04 modes. The 1.3 should assign the system paths to the 1.3 drive; i.e., assign libs:, l:, s:, fonts, etc., to your 1.3 hard disk. The 2.0 startup-sequence can just use the defaults found on the boot drive. ■

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(In Sculpt format)

Armrack, Barrel, Cactus, Carriage, Coach, Flatcactus, Gun+Armrack, Gun, Locomotive1, Railway, Revolver, StraightChair, Table

VEHICLES #APA3
(In Sculpt format)

Biplane, Car, Motorcycle, Gaspump, Model A, Model T, PickUpTruck, FlatbedTruck, TankerTruck

LANDSCAPES #APA4

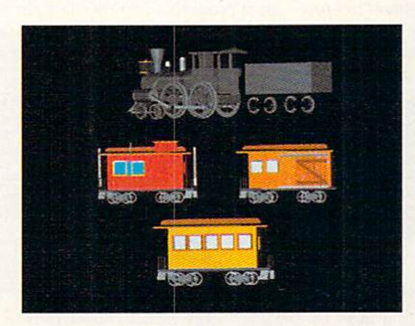
Save time and frustration in creating landscapes for images and animations.

Cyberscape 1.2 generates fractal terrain and saves it as a 3-D object file in either Sculpt 3D /4D, Turbo Silver 3.0, or Lightwave 3D (Video Toaster) format.

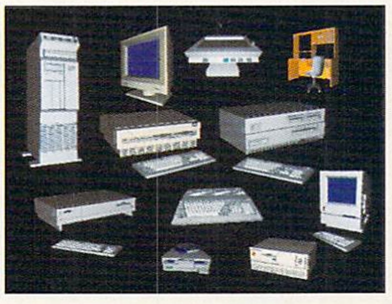
Sculpt Terrain 1.0 creates script files for use with Sculpt 4D.

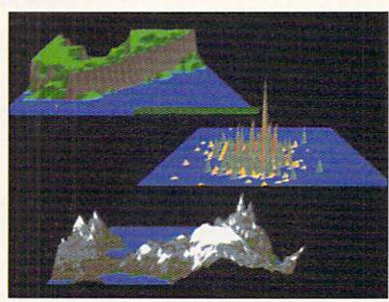
SNACKBAR #APA5
(Imagine format)

Awning, Chips, CoffeePot, Cola, Cup&Saucer, DogN'Fry, EggsN'Bacon, Fork&Knife, Hamburger, Jukebox, Milkshake, Mustard, Snackbar, Stool











TRAINS #APA6
(In Sculpt format)

Locomotive2, Caboose, PassengerCar, BaggageCar

ENTERTAINMENT #APA7
(In Sculpt format)

Banjo, Guitar, Bugle, Piano, Trombone, Trumpet, Violin, Lantern, OilLamp, PotbellyStove, SpinWheel, Stool, Camel, Diver, Spaceman, Jack-In-Box, ToyElephant, ToySoldier

COMPUTERS #APA8
(In Sculpt format)

1000Computer, 1000Keyboard, Amiga_Keyboard, 2000Computer, 3000Computer, 3000Tower, 500Computer, Camcorder, Drive&Disk, IBM_PS2, Macintosh, Mac_Keyboard, Monitor, Mouse, Printer, Workstation

CHESS #APA9
(In Sculpt and Turbo Silver formats)

Bbishop, Bcastle, Bking, Bknight, Bpawn, Bqueen, Chessboard, Wbishop, Wcastle, Wking, Wknight, Wpawn, Wqueen

HONEYBEE #APA10
(Imagine format)

Bee, Daisy, Glad (flower), Honeypot, Rose-Full, Rose, Candle1, Candle2, Lantern, OilLamp, WaterPump, WellBrick, Face1, Face2, Lizzie (car), DeliveryTruck

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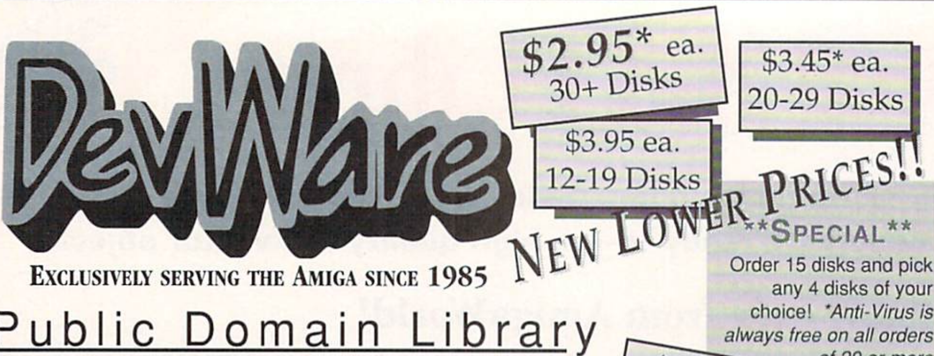
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V03: Image Utils - let VideoToolsOnTap let you tap into the video power of your Amiga for fades, color and greybars as well as a plethora of other indespensable video functions. TitleGen will do professional crawling titles. JPEG converts JPEG-> IFF with amazing compression. ImageLab performs special effects on IFFs.
V02: Stillstore - Used to create the "over the shoulder" graphic inserts ala the 11:00 news.
V01: Graphics - Picbase will let you view and track ALL of your IFF pictures over all of those floppies! Freepaint is a Deluxe-Paint workalike. Agraph is a powerful utility to produce snazzy graphs.
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FD79: Addams Family Quiz - They're delightfully creepy and spooky and now they're in your Amiga! Classic digitized graphics and sound samples make this a real crowd-pleaser. Wait till you "talk with Cousin Itt!"
FD78: Potpourri - Lothian is a great Ultima-type adventure game with great graphics. Rocky is a remake of the classic Boulderdash.
FD77: Arcade Series - Galaga'92 is a clone of the arcade game of the same name with several gameplay enhancements--with smooooth, sharp graphics, it's better than the origional! Pharaohs Curse is a clone of the origional C64 classic. Diplomacy is a beautifully computerized version of the Avalon Hill board game--conquer or be conquered! Galaga requires 68020+
FD76: Catacomb - is a full graphic dungeon adventure game with beautiful graphics and a very slick icon/mouse driven interface.
FD75: Arcade Series - Descender is a clone of the classic arcade game "Tempest"; complete with vectorized graphics. Tanx is the classic battle of trajectories and inertia between two tanks—incredibly well done! Search is a maze game unlike any other—included is a level editor too. (Tanx requires 1 meg chip memory=Fat Agnus)
FD74: Arcade Series - RingWar is an "Outer Limits" clone with vectorized graphics. MotherLode is a "Lode Runner" clone with 50 levels! In BlitzTanks, they're coming at you from all directions!! Call in air strikes and use your heavy artillery to survive!
FD73: Arcade Series - Intruder Alert! is a MULTI-level "Berserk" clone. Features smooth gameplay, great graphics & digitized sound f/x.
FD72: Sword of the Warlock - This is a demo version of a great public domain graphic dungeon adventure game. The adventure spans three diskettes and allows two players to go adventuring. The game has a 'Bards Tale' feel to it. Three disk set, counts as 2. Requires 1 meg of RAM and 2 floppy drives--HD installable.
FD71A&B: Star Trek: TNG Trivia Challenge - So you think you know The Next Generation, huh? Complete with fantastic sampled sounds and digitized images, this game even looks and sounds like a genuine Star Trek terminal! VERY thorough and complete! Counts as 2 disks.
FD70: SpaceGames - Contains AmiGoids, >finally!< an Asteroids game that takes advantage of the Amiga—totally configurable with great sound and grpahics. In Cosmostruction the object of the game is for each Cosmostruction team to acquire the most points while construction energy ducts between the space station and planetoids.
FD69: MindGames - Had enough of shoot-em up games? Relax and let these 21 games exercise your mind instead of your wrist.
FD68: Potpourri - Eternal Rome is a strategic simulation of the Roman Empire including military, diplomatic, political, economic and social factors. Lord of Hosts is a board strategy game for 2 players. In Moonshine, you've got to get the hootch across the state line—a great rolling, scrolling driving game!
FD67: Arcade - Includes Llamatron a well-done 'Robotron' clone. Hate is a "terrific" commercial grade Zaxxon clone with multiple levels/worlds and smooth diagonal scrolling...a 10!
FD64: Games - Wizzy's Quest - a "great" 50 level game with great graphics, Cubus - a 3-dimensional Tetris type game (rotate and move in 3 dimensions). Husker Du - Colors and pattern rather than shape in this Tetris-esque game; 5 screens and 3 levels of difficulty. Requires Fat Agnus (1 Meg of Chip)
FD62: PomPom Gunner. An extremely smooth and well done World War II gunner simulation. Requires 1 megabyte of memory.

SPECIAL PRODUCT!

QT1: THE A64 PACKAGE - A very complete Commodore 64 emulator. Supports any CPU and is fully compatable with WB1.3 & 2.0. This version includes a special adaptor that will allow you to connect your 64's 1541 disk drive to your parallel port of your Amiga for total emulation. Two disk set, counts as two. Special price $49.95 - including hardware.

WB120: Grinder - a complete graphics conversion package that supports GIF's, JPeg, Atari ST (Neochrome & Degas), PCX, Targa, TIFF, HAM-E and IFF format pictures.
WB118: Amiga Beginner - You asked for it! A tutorial for the beginner on using your Amiga! Covers the CLI and Workbench, it's great for learning about the Amiga. Also contains numerous *beautiful* 16-color icons for WB 2.0
WB117: Religion - Contains Scripture_Mem (aids in memorizing verses and passages) and in Pauls Journey, you are Paul of Tarsus exploring the Mediterranean and preaching just as Paul did. Req. 1 MB RAM.
WB116: Databases - This is what you've been waiting for! Contains 5 uniquely specialized dtabase programs for tracking: Videotapes, CD's, Magazine Articles, Comic Books and Trading Cards!
WB115: Term - If you have AmigaDOS 2.04 and a modem, then this is *THE* program for you. Term *totally* conforms to the User Interface Style Guide for 2.04, has an ARexx port, and supports all popular file-transfer protocols through XPR libraries. We wish all programs were written to this caliber.
WB114: Fonts #4 - Contains 36 bitmap system fonts.
WB113: Sid II - Why pay 40 bucks for a directory utility, when this one will do it all plus much more! A truly professional-caliber program. Sid 1 was our best, now *completely* rewritten, Sid 2 will undoubtedly astound you.
WB112: Productivity/Business - Stock Analysis allows automated downloading of stock data with full analysis capabilities (requires modem). SubStore will allow you to log magazines and articles with full search/scan/print capabilities.
DD87: Amiga Intuition Based Benchmarks - a great package with all the popular benchmarks including Sieve, Dhrystone, Savage, IMath & Matrix.
DD86: The Programmer - Includes GadTools and REQTools which will allow you to create your user interfaces and then the program will automatically generate "C" source code or Assembly-code--saving you countless hours of work! Requires, and writes code for, AmigaDOS2.04.
DD85: AnalytiRIM - Tis incredible program is a combination of a powerful spreadsheet and a Relational Information Manager (database). Not for the faint of heart, this is a heavy-duty package! Req. 1 MB RAM.
DD84: Proteus BBS - This disk contains the full-blown version of the Proteus BBS software. Totally configurable & ultimately powerful. Requires a hard-drive, ARexx and at least a meg of memory.
DD83: IBM - Not one, but *TWO* IBM emulators that will allow the running of MS-DOS software *with* Amiga programs!!! Comes complete with programs to turn your Amiga floppy drives into 720K IBM compatable drives.
DD82: Unix - Contains a working demo of Minix - a Unix workalike. Minix is system call compatable with V7 of Unix.

FUN DISKS

FD5: Tactical Games - BullRun - a Civil war battle game, Metro you play the role of a city planner. Build wisely and your system will be a success, but poor planning will lead to disaster and financial ruin. Very very habit forming.
FD6: GAMES! - This disk is chock full of games including; Checkers, Clue, Gold - A new slide the pieces puzzle, Jeopard - An enhanced version of Risk, RushHour - Surprisingly addicting, and SpaceWar - Best described as a cross between Combat-Tanks and asteroids.
FD7: Pacman - This disk contains several pacman type games including; PacMan87, MazMan and Zonix.
FD9: Moria -. This has great graphic controls, multiple spells, similar to Larn and Hack. Play time several weeks!
FD10: HackLite - A dungeon adventure game. Considered a must-have classic. This is the second release of this game on the Amiga. Great graphic interface. Play time several weeks!
FD11: Las Vegas and Card Games - Las Vegas Craps - The best Las Vegas Craps simulation every written for any computer. Contains extensive HELP features, Also Thirty-One,VideoPoker and more.
FD12A,FD12B: Star Trek, The Game - This is by far the best Star Trek game ever written for any computer. It features mouse control, good graphics, digitized sound effects and great gameplay. Counts as 2 disks. Req. 1Mb and two drives (or hd).
FD13: Board Games - contains multiplayer Monopoly, Dominoes, Paranoids, and others.
FD14: Dungeon Master Hints and Arcade Games - DM maps, spells, item location, and hints and more, also on this disk, Hball - an arkanoid/breakout type game, Trix - a Qix-type clone.
FD17: Educational Games - This disk includes several games for the younger members including geography, math, science, and word games, also includes Wheel of Fortune.
FD20: Tactical Games - MechForce(3.72); A game that simulates combat between two or more giant, robot-like machines. Simple words can't begin to give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim.
FD26:Arcade Games - Marble_slide is a commercial quality game—similar to a Lucas game named PipeDreams, excellent playability and entertainment. Mutants—a small version of the same arcade game. SuperBreakout is a Pong/Arkanoids type game.
FD27: Arcade Games - This disk is loaded with some great games. Includes, Raceorama a great racing car game with ten different courses, MiniBlast a helicopter gunship type clone, Shark in the same class as froger, and SBreakout the original breakout with more.
FD29: Shoot'em up's - WWII - you're the pilot of a WWII plane flying through enemy territory, you've just been spotted, good luck on you mission, SpKiller - try and penetrate enemy lines with this game, and Retaliator - another great game.
FD31: Games! - Air Traffic Control - a good ATC simulation, Black Jack Lab - a full featured set of card games, ChessTel - play chess with your friend in distant and remote places with this game and a modem, labyrnth - a well done text adventure game (like an infocom game), and MouseTrap - a 3d maze game.
FD32: Flight Simulator - An instrument flight simulator for a DC10.
FD33: Arcade Games - Ffreddy a Mario Brothers type of game, Gerbils a target practice game, PipeLine a German interpretation of Pipe Dreams, Tron a light cycles version, and Wetroids a wonderful version of asteroids with a hilarious twist.
FD35: Omega (v 1.3) - A new outstanding dungeon and outdoors adventure game in a similar vein as hack, rouge, and moria. This version is considerably faster and better that all previous versions. Play time several weeks.
FD37A&B:Tactical Games - Empire (2.2w) This great game comes highly recommended. With a full-graphic front end.
FD38: Games - Cribbage Master - A great cribbage game and tutor, Spades - a well done card came, ChineseCheckers - A computer version of this classic, Puzz - a slide piece puzzle game and construction set.
FD39A&B: Star Trek, The New Generation - This is a, completely different version of Star Trek than that found on FD12. This one was created by the German author Tobias. Now with English instructions. Excellent!!! Counts as two disks. Requires 512k
FD44: Game - Mechfight is an out of this world role-playing adventure comparable to hack and moria. The setting, interplanetary colonies and space stations. In your quest to explore the world, take time out to liberate bad guys of their most valuable possessions, engage in a mortal combat or two against robots and alien life forms, pick up a new Amiga 9000. Most of all, don't forget to stay alive...
FD49:Chaos Cheats - This disk contains an everything you wanted to know about cheat set for Chaos Strikes Back, including full maps, spells, object locations, super characters and more.
FD50: Submarine Game - Sealance, one and a half years in the making, this is an outstanding submarine tactical game. Commercial quality, highly recommended.
FD52: Classics Games - PetersQuest a well done Mario brothers type of game, Jymbc a two player missile command clone, and Vstank a tank commander game.
FD53: Great Arcade - On this disk is a wonderful implementation of the ever popular classic arcade game Defender. Also contain Air Race a WWII flying ace arcade game, and Psycoblast new creation idea game.
FD56: Arcade - Includes SpaceWar. HueyRaid is a well done helicopter arcade game. PowerPong's a great expanded pong game.
FD57: Arcade Games - Includes 2 truly commercial quality games. MegaBall, an Arkanoid-ish game, features 5 musical scores, multiple levels and addicting gameplay. Gravity Attack is a psychadellic trip through several different worlds—each distinctly different.
FD58: GAMES! - Includes Steinschlag; a great Tetris clone from Germany with music. SCombat: simulate battle between up to 40 players & monsters. Imperium Romanum: Battle up to 4 players for control of the Mediterranean in this Risk-esque game.
FD59: Game Potpourri - Xenon III is an almost exact clone of the commercial game of the same name...a great shootemup. Crossword will take lists of words & automatically generate word-search puzzles for any Epson compatable printer.
FD60: Games - In Nebula, race over a 3d world to destroy enemy installations. Interferon; a great Dr. Mario clone. Enigma; is it a gameor a puzzle?
FD61: Games - Solitaire; great graphics, plays two versions. Klide; an interesting piece of eye candy. Extreme Violence; 2 player kill or bekilled game. YATC; A Tetris clone with Artifical Intelligence. Genesis; create realistic 3d fractal worlds.

WORKBENCH DISKS

WB4:Telecommumnication - This disk contains several excellent pd communication programs designed to get you on line quickly and easily, Access (1.42) - A very nice ANSI term program. Comm (1.34) - Latest version of one of the best public domain communications programs ever made on the Amiga, Handshake (2.12a) Handshake is a Full featured VT52/100/102/220
WB5: Fonts #1- Several fonts (35) for the Amiga, also included are five PageStream fonts,and ShowFont - a font display program.
WB6: Fonts #2 - ShowFont(4.0) This program allows you to quickly and painlessly view all 256 characters in a typical font. Large AmigaDos system fonts (many up to 56pts).
WB7: Clip Art - This disk is loaded with black and white clip art. Art includes, trees, watches, tools, US and State maps, and more.
WB9: Icons - Truly a multitude of various types and kinds. Also includes IconMiester, IconLab, and others great utilities to help generate icons.
WB10: Virus Killers - The latest and best VirusX(4.0), Kv(2.1), and ZeroVirus III.
WB11: Business - Clerk(4.0), finally a full featured business accounting PD program for the small to medium company. Includes receivables, payables, end of month and uch more.
WB12: Disk Utilities - This great disk is loaded with wonderful utilities for everything including making disk labels, disk cataloging, disk optimizing, disk and file recovery archive and organizing, and all sorts of file manipulation. A must have!
WB13: Printer Drivers and Generator - over 70 different drivers, and if these don't do it, with PrtDrvGen you can make your own.

WB15: Business - This disk contains a spreadsheet, a database, a project/time management program and financial analysis (stocks).
WB16: Business - This disk contains an inventory manager, a loan analysis program, a great calendar/scheduler, a rolodex program, and pennywise a good "Cash Book" accounting for home or office.
WB18: Word/Text Processors - This disk contains the best editors. Includes,TextPlus (v2.2e) a full featured word processor, Dme(v1.35) a great programmers editor with strong macro features,TexED(v2.8) an enhanced Emacs type editor, and a spell checker.
WB22: Fonts #3 - Several more great fonts. These, like the other font disks work great with Dpaint and WYSIWYG word processors.
WB23: Graphics and Plotting - Plot (20b) a three dimensional mathematical function plotter. Can plot any user defined function, BezSurf2 - produce awesome pictures of objects one could turn on a lathe. Can also map iff image files onto any surface that it can draw. Now compatible with most 3D packages, and VScreen - makes a virtual screen anywhere, great for DTP!
WB25:Educational - On this disk are two programs that can generate maps of differing types, World Data Base uses the CIA's data base to generate detailed maps of any entered user global coordinates. Also Paradox a great demonstration of Albert Einstein General Theory of Relativity.
WB26: Disk Utilities #2 - MrBackup, KwickBackup - two well done utilities to do harddisk and floppy disk backups, FileMast - a binary file editor, Labelprinter - Disk label printer with very powerful features.
WB27: Nagel - 26 Patrick Nagel pictures of beautiful women.
WB29: Graphics and Sound - This disk has several different Mandelbrot type programs for generating stunning graphics. Includes, MandelMountains - a realistic terrain generator, Fracgen - generated recursive fractals from user input, Mandelbrot and Tmandel - two fast mandelbrot generators, also

KAO 3[1/2"] Blank Diskettes DSDD

10 for	$9.20	(.92 cents ea)
25 for	$21.25	(.85 cents ea)
50 for	$38.50	(.77 cents ea)
100 for	$72.00	(.72 cents ea)

No shipping charge on USA blank disk orders, Canada and Mexico add $.15 each, other foreign add $.50 each.

Mostra - the best IFF display program to date, will display ALL IFF's including Dynamic HAM, and Sound - a great IFF sound player, will play anything.
WB33:Circuit Board Design - several terrific routines for the electronic enthusiast, Including PCBtool - a circuit board design tool, LogicLab - circuit logic tester, and Mcad (1.26) a well done new release of this PD CAD program, now comes with predrawn common circuit components for insertion into schematics.
WB34: Utilities - Several well done utilities, some will require moderate knowledge of a CLI or Shell for setup, Chatter Box - this one will play any user defined sound after any event (ie. disk insert, mouse click, disk removal...), , Artm - The Amiga real time monitor, gives you full control of the Amiga OS, very powerful program, Helper - help program to make learning the CLI easier, and more!
WB35: 3D Graphics - This disk contains several neat programs to use with your 3d modeling/raytracing programs 3dFonts - Full vector font set for use with 3d programs, FontMaker - make 3d fonts from any system font, Make3DShape - create 3d shapes from any image, DumptoIFF - create 3d animations preserves pallet, and World3d - a demo program of a front end for use with DKBRender.
WB36: Graphics - On this disk are several programs to create stunning graphical images including, MPath - creates swirling galaxy images, Roses - produce an unlimited number of variations of images that a symmetrically similar to a rose, SimGen - display those spectacular images as part of your workbenck screen, and RayShade - a very good raytracing program, create your own beautiful 3d graphic models with this one!
WB37: Educational - Educational games and puzzles that cover math, geography, spelling, and books. Ages 6 - 15
WB38: Plotting and Graphics - Plotxy is the most powerful full featured plotting package. Used by many colleges and universities. A welcome addition to our library! Highly recommended. Plans - a incredibly well done Computer Aided Drafting program, very full featured. Tesselator - a program that helps generates fantastic looking, recursive M.C. Ecsher type pictures.
WB40: Music - "CD on a disk", 90 minutes of modern music on this well presented collection. Requires 2 drives or HD.
WB41: Music - MED an incredibly well done, full featured music editor. Create your own stunning music directly on your the Amiga. Similar to SoundTracker but better. Very powerful easy to use program. Version 3.20, which is compatable with WB2.04.
WB43: Business - This disk contains AnalytiCalc - probably the most powerful spreadsheet program on the Amiga. A full featured spreadsheet with many features expected in a commercial package. Requires 1.2 MB of memory!
WB46: Clip Art - HighRes clip art with the following motifs - embellishments (borders, dodads ,...), people, and transportation.
WB47: Clip Art - HighRes clip art with the following motifs - hair, drafting, summer, animals and macfood.
WB48: Clip Art - HighRes clip art with the following motifs - Holidays, music, medical, and misc.
WB49ABC:Animation Sampler - On this three disk sampler set (counts as two disks) are some of the best animations that have been created over the last three years. Several examples of "Movie" type animations some with spectacular raytraced reality (coolroby, watch, spigot and egg). Also several european style or "Demo" animation with incredible graphics and outstanding electronic music (akrilight, copersine, doc, dps2010, impact, and logodemo). These truly show off the creative edge of an Amiga!
WB50: Animation - Seven of the best european style animations or "Demos", including - scientific 451, subway (a U.S. entrant, also our favorite), sunride, thrstdemo, tnight, waves, and woow.
WB53: Graphics - Raytracing programs generate absolutely stunning realistic looking planes, rockets, buildings..., and surreal images often consisting of highly polished spheres and objects. C-Light is the most powerful EASY-TO-USE of it's kind we have seen to date. This is easily better, and more full featured, than similar commercial programs costing in the hundreds of dollars. Also, sMovie - a full featured video text titler similar to ProVideo, Broadcast Titler. Great video scrolling, wipes, special effects, and more...
WB54: Printing - This disk contains several routines to help with the chore of printing. Includes Gothic - Finally a Banner printer for the PD! PrintStudio -a well implemented all-purpose printer-utility with a very comfortable graphic interface and many advanced features, Lila - with ease, print ASCII files to a PostScript printer, and many more.
WB55: Application - XCopyIII - a full featured disk copier, make backups of copy protected disks. RoadRoute - find the quickest route from one city to another, highway description included. Diary - a diary program like "Dougy Howard M.D", Cal - a calendar program, Magman - a database tailored to maintain records on articles and publications.
WB57: Animation - This disk has several "Demo" style animations, Including, Blitter, Lolly, Sun5, vertigo, vortex, and xenmorph.
WB61: Intermediate Utilities - Includes programs to help to drasticaly decrease flicker in interlace and hi-res modes (antiflick), an Atari-st emulator, an eprom programmer, turn your amiga into an eight channel digital data analyzer or ocilloscope, and more.
WB62: Midi Utilities - Several useful midi utilities including, programs to transfer to and from several music programs to midi, a midi sysex handler, a midi recorder with timebase, display midi info, file sequence player, and a few scores.
WB63: Disk Utilities #3 - Several highly recommended programs to aid in removing duplicate files from your hard drive, performing file backups, Binary editing, fast formatting, file recovery, disk track recovery, and forced DISK VALIDATION of corrupt disks.
WB66: Icons #2- Lot's of neat icons. Also, several wonderful programs that to let you create your own icons, modify and manipulate icons and info structures.
WB68:Music Utilities - several good utilities for the Amiga music enthusiast. Includes, Noisetracker - a great music creation program, Sonix2MOD - converts sonix to .mod files which then can be used by noisetracker, soundtraker, and MED, SpeakerSim - a speaker design tool demo, Wondersound is an additive harmonic instrument design tool with a separate envelope design window and 16 relative harmonic strength and phase angle controls.
WB69: Music - This disk has over 90 minutes of classical and modern electronic music for you Amiga.
WB70: Desk Top Pub - Atcp - transfer Macintosh screen fonts, Mac or IBM format .AFM metric files, to Amiga screen fonts and PPage .metric files. With this program, open the door to the libraries of Adobe and PostScript fonts! Calendar - month templates in PageStream form. Post - a full featured postscript file display and print utility.
WB75: Music - over 100 instruments files (.inst) and sample sound files (.ss) for your music programs.
WB76: Applications - This disk contains Stichery - a often requested knitting design program, Lotto - a rather complete lottery tracking and prediction utility, SSS - this screen capture program can grab almost any screen including games, Today - a personal calender, Tarot - fortune teller, and Grammar - grammar checker.
WB79: Home & Business Accounting - Includes Ckbacct - the most complete checkbook accounting program going, LCDCalc - this well done calculator has a very large display and operates from the keyboard or mouse, Mileage master - monitor your automobile mileage with this mileage log, Grammar - a grammar checker, and Worldtime - find out what time it is in up to 50 global cities.
WB81: Great Applications - DataEasy a very easy to use, database program. Don't let the ease of use fool you, this is a very full featured database program including full printer control for address labels and mail merge applications. Also includes, TypeTut a good typing tutor, RLC a full featured label printer, Banner, a multi-font banner maker, and Budget a home accounting in a program. Highly recommended.
WB82: Animations - Four full length, well done "movie" style animations, Including, Coyote, JugglerII, GhostPoo, & Mechanix. 2 disks, counts as 1.
WB83: Computer Art - this disk has some of the best Amiga generated computer art that we have collected in the past 5 years.
WB85: Graphics - Contains several programs for manipulating 24 Bit color images (ham-e) and a rather nice Iff Image processing package.
WB86: Centurian Press - An electronic newspaper - requires AmigaVision.
WB88ABC: The Complete Bible - A three disk set, with the entire text of the New Testament and Old Testament-King James version. A great utility. Three disk set, counts as three.
WB90: Rippers, Strippers and Beats - For the Amiga music enthusiast, this disk contains many programs designed strip music from your favorite games and programs. Also contains Drums, a very nice drum machine. This disk requires some knowledge of the CLI.
WB93: Workbench Extras #2 This disk contains the utilities that Commodore should have shipped with the Amiga; VirusX4.0, Snap, FixDisk (recover corrupt/deleted files), Disk Optimizer (floppy & hard), MachIII (screen blanker, hotkey, mouse accel., macro, clock utility), GOMF (a guru-buster)and PrintStudio.
WB95: Checkbook Accountant 2.1 - This is definitely commercial grade; we've seen many checkbook programs and this is absolutely the best. Full budgeting, transaction recording and report generation.
WB96: Dupers - Contains XcopyIII & Nib which will backup copy-protected programs. FreeCopy removes copy protection from several programs, and SuperDuper will crank-out fast AmigaDOS copies.
WB98: Business - Includes BBaseII a nice, powerful database; BizCalc—a personal or mortgage loan calculator with amortization capabilities, Loop—a flowchart maker, Formmaker - design professional forms on your Epson LQ-2500 compatible printer.
WB99: Lifestyles - Includes AGene—family tree program that tracks up to 600 people/marriages/etc. Landscape is a CAD program to create gardens/landscapes. Loom simulates an 8 harness loom; experiment with pattern design in an instant feedback environment.
WB101: Chemesthetics - is a program that displays molecules as a calotte model. This kind of display contains a certain esthetic attitude, even extremely poisonous molecules like nicotine and dioxine look quite nice.
WB102: Telecommunications - Contains the programs NComm 2.0 and VT100-29B. Zmodem protocols, XPR protocol support, full VT100 emulation. NComm's script language is so powerful it comes with a script file that creates a full-featured BBS system.
WB103: Music - Contains 12 "great" Soundtracker/MED music MODules...complete with programmable/shuffle player...8 bit audio never sounded so hot! Two disk set counts as two.
WB104: GrabBag - Q&A Trivia (requires AmigaVision) is a trivia game for 1/2 players...add your own questions to customize the difficulty level! Sysinfo is great for telling you how fast/slow your computer is, what boards are installed, chipsets, etc. AmiGazer will plot stars in the heaven from any position on earth complete with magnitudes and constellation identification.

WB105A&B: Workbench 2.0 Extras #2

This set contains the programs that should have been included with WB2.0. These powerful utilities take full advantage of the *many* new capabilities that are available in Workbench 2.0.
Tool Manager - a wonderful utility to add programs to your TOOL menu, create a collection of icons on the workbench to easily launch frequently used programs...and much more! A *true* must have utility!!!--*All* of our Amigas rely on this utility. (See the review in AmigaWorld-May'92)
Virus Checker - Full virus protection can be yours by simply dropping this icon in your WBStartup drawer.
Degrader - gives you tools to try to make non-2.0 happy programs work!
Icon - Enhances Workbench's "Show All" to display over 40 distinct icons for different types of files (text, IFF's, source codes, libraries, etc)
Font Editor - Create/edit bitmap fonts with full color support!
Screen Blankers - ala fractals and spliners and swarming bees! No more boring black screen. Colorful, interesting and highly hypnotic effects!
Requester Enhancers - no more stale "Please Insert Volume" requesters--these are animated requesters for *all* of the system's requesters.
CPUBlit - speeds up text displays for owners of 68020+ CPU's.
SafeReboot - adds a safe way to reboot your computer...can greatly reduce disk validation errors!

TWO DISK SET, COUNTS AS TWO

WB106: Home Manager - This is a great all-in-one address book with an autodialer/notepad/to-do list/appointment scheduler/home inventory database and phone number dialer.
WB107A&B: Educational - Drawmap is a program that generates representations such as hemispherical views, and orbital views of the Earth's surface, complete with national boundaries. Screens can be printed or saved to disk as standard IFF files. Full user-configurable online help facility. 68020+ version included. 2 disk set, counts as 1!
WB108: OctaMED - This breakthrough program doubles your Amiga's sound capabilities from 4 channels to an ear-popping 8 channels! All the renound editing capabilities of MED plus 4 more channels! If you thought your Amiga sounded good before...you aint heard nuthin' yet!
WB109: VerseWise - Display, search and output The New Testament to text files or your printer.
WB110: Electronic Baby Book - Immortalize your children on your Amiga! Tracks everything about your newborn—first steps, words, tooth, birthdays, X-mas, friends, etc—even space for a digitized photo!
WB111: Cellular Automa - Straight from the pages of the January 1990 issue of Scientific American, this electronic model will allow you to simulate cellular circuits.

DEV DISKS

DD45: AREXX Programs - This disk contains several useful arexx programs and examples. PopCLI4 - The latest of a must have utility.
DD47: Pascal - This disk contains everything needed to program in Pascal. Includes, A68k (1.2) 68000 assembler, Blink linking software and PCQ (1.0) a modest Pascal sub-set compiler.
DD49: C Compiler - contains zc(1.01) fully K&R, zcc(1.0) front end, A68k(1.2) assembler, Blink linker.
DD50: ARexx #2 - a must have set of tutorials on ARexx and several useful examples and utilities for ARexx development.
DD51: Circuit Analysis - Aspice (2.3) A full featured program for electric circuit analysis.
DD52: Scientific - Includes Elements - an incredibly well done periodic table program with source, Scientific plotting - over 600k of Lattice C source routines that can be included in your own programs.
DD54: Compression - This disk is loaded with all of the best file compression programs and aids for the Amiga. Many of the programs can be used by the new user. Includes Arc, Lharc, Lhwarp, Pkax, PowerPacker a must have by all, Zip, Warp, and Zoo. Also IFFcrunch an excellent compression for IFF files.
DD55: ARP - On this disk you will find the complete ArpRel3.0 release including the full users docs, the full Developers guide. ARP is the official AmigaDOS Resource Project (ARP) release 1.3. ARP makes many improvements to AmigaDOS and makes your CLI more powerful.
DD57: Advanced Utilities - Msh - like Cross-dos, copies files to and from MS-DOS, Pal-NTSC - convert any pal program to NTSC and vice versa, Also several boosts for your startup-sequence, plus 25 more programs.
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The Game Preserve

SimEarth

By Peter Olafson

AT ITS BEST, playing **SimEarth** (***Maxis***, $69.95) is like being in some wonderful, omnipotent bio-physical laboratory. The steaming, shifting Earth is on the slab, the scalpels and retractors are at your right hand, and it's time for dinner.

Based around James Lovelock's Gaia theory (Earth's evolution is a single, closely knit, self-regulating process), SimEarth is a grand-scale version of Maxis' lovely small-systems simulations (SimCity and SimAnt). Using an icon interface similar to the earlier games, it places at your disposal a wide array of instruments to coax a planet to a happy, healthy and prosperous—or possibly just weird—future. Overall, my reaction is pretty warm—much like the Earth a few hundred million years ago.

Once past the pleasantly simple copy protection, you pick one of eight scenarios. You can terraform Mars or Venus. You can build continents or encourage civilization. You can pick up where Earth left off in 1990. And you can shepherd a random world from glowing ball of hot rock to one bursting with life from prokayotes on up to carniferns (carnivorous, occasionally sentient plants *à la* Little Shop of Horrors).

You can influence that growth both in broad terms via a set of models—for instance, the one for atmosphere allows you to regulate the "greenhouse effect" and rainfall—or edit it in detail by triggering events, setting terrain, and placing lifeforms . . . or even monoliths. (Do these folks like the movies, or what?)

This is not SimCity, however, where simple human experience was a pretty sound play guide for the beginner. Do not rush to install this baby and loudly proclaim 15 minutes later that you do not understand it. It's not a boot-and-shoot, but a real simulation, and even God needed Sunday off after creating Earth. The spiral-bound manual is 220 pages long—and you'll find it useful and interesting, even if you hate reading manuals.



Who's on Earth?

With that little phone book comes a 16-page quick-start guide and two copies of the game—a very sharp hi-res (640×400) version (requiring one megabyte each of chip and fast RAM) and a lo-res (320×200) one (requiring 512K of each). SimEarth runs under AmigaDOS 1.3, but Maxis recommends using 2.04, a 16-MHz processor, a hard drive, and, for the hi-res version, a deinterlacer.

Continued on p. 101.

CRIB NOTES By Peter Olafson

Ultima VI: The False Prophet (*Origin*, $69.95) is on the high side of huge. Here's the first part of a guide that will make it a little smaller. This time we'll deal with the game in general terms, and in future columns get into specifics . . . and some interesting oddities.

First off, there is an enormous number of takable objects in the game. I mean hundreds of 'em—crockery, clothing, raw materials, food, tools. It's part of the fun, of course, but it can slow things down if you don't exercise discretion, and some people are having inventory problems—either struggling to manage a pawn-shop's-worth of accumulated possessions or agonizing over what to dump or not to dump.

So listen: Take only what you *know* you need, not what you think might be useful at some point, and simply note the whereabouts of the rest; you can come back to it later.

By the same token, don't load up your party with too many extra members. There are around a dozen nonplayer characters whom you can invite into the fold, and, naturally, it's fun to have the whole crew from Ultima V on hand. But it makes life much more complicated, to say nothing of speed and playability issues. Besides, only a few of the NPCs have anything to contribute, and some of 'em are real weenies when it comes to combat. (Exceptions: Gwenno, Gorn and, in particular, Seggallion, who you'll find at Serpents Hold. He's a good fighter and a regular pack horse.) You can complete the game quite happily with just your starting quartet and the occasional hired hand . . . or paw.

Magic isn't that big a deal here compared to the earlier games. For one thing, the Avatar is the only one who can cast spells. (Don't even bother looking for NPCs who can turn that trick.) For another, while there are a lot of spells in the game, you apparently can prevail while using relatively few, so don't feel you have to sell the farm to fill up that little black book. Travel light.

I've seen different accounts of which spells are strictly necessary for success. Here's a conflation of them: Dispell Field, Dispell Magic, Explosion, Great Heal, Invisibility, Mass Dispell, Mass Invisibility, Pickpocket, Telekinesis, Unlock Magic, and Wind Change. If you've come across any weird uses for the others, let me know.

Behave yourself. And neatness counts. I've heard stories to the effect that social graces aren't as closely enforced in Ultima VI as in its parent games, but I suspect that impression comes from the fact that

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To locate vendors of the games reviewed, see the "Manufacturers'/Distributors' Addresses" list on p. 104.



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From p. 98.

SimEarth's only sin of consequence is distance—the overall complexion is cool and dispassionate—and that may be a necessary sin for a global simulation of this sort. It is like a lab. Life seems rather far away, and this may not sit well with fans of the endearingly intimate SimCity and SimAnt. A superb array of graphs and charts is available here, but no surveys, and you'll welcome the commentary of the grimacing planet face in the Gaia screen (which reminds me of the teeth-gnashing tennis ball in Sega's Passing Shot).

If only the prokayotes could vote.

MEGAFORTRESS

By Rob Hays

MEGAFORTRESS (*THREE-SIXTY/Electronic Arts*, $59.95) is not so much a flight simulator as an aircraft simulator. The aircraft being simulated is a fictitious, highly modified B-52 bomber, refitted with state-of-the-art electronics and stealth technologies. You play the pilot, copilot, navigator, electronic-warfare officer, and offensive-weapons officer. If this sounds like it could get complicated, you are right.

Each position has its own station on the plane, with controls and displays suitable to the duty. You switch between them by clicking on your intercom panel. If a particular station requires attention, its light flashes on the panel, so you don't need to keep switching stations just to check for trouble. The graphics are quite well done, with moving switches and throttle levers, plus indicator lights that change when selected.

Megafortress probably approaches the maximum amount of detail that can be included without losing playability. For instance, there are seven steps to take before the engines start. The copilot controls the plane's hydraulic, electrical, and fuel systems, among others. The electronic-warfare officer monitors and jams hostile sensors, and the offensive-weapons officer uses part of the massive arsenal to destroy the target. Low-light television systems allow for navigation and targeting without using position-revealing radar.

The 16 training missions help you become proficient enough ►

CRIB NOTES

From p. 98.

we're not hit over the head with virtuespeak at every turn. Killing nice people and stealing—even from the bad ones—costs you karma points, which are monitored invisibly by the program. You'll need at least your starting supply of 75 to finish the game. Now, you do *gain* karma by talking to the shrines and performing certain deeds, so . . . yes, you can get away with a little bad attitude, but don't go nuts, eh? (I've heard of a nice IBM cheat for displaying your karma points, which I'll mention next time round if I can confirm that it works on the Amiga.)

This almost goes without saying in an RPG, but talk to everyone (even the mice) and note what they say. (It's pretty easy to separate small talk from hard information in this game.) Some folks getting lost are simply in too much of a hurry, and are skipping over creatures who have something useful to impart.

You're going to spend a lot of time traveling in Ultima VI, and it's worth investing a little time to see what works best for you. Swamp boots are nice for footing it, as they permit you to trudge through that difficult terrain without getting poisoned, thank you very much. (I never could find any practical advantage to the horses, though the animation is charming.)

A skiff is fine for sea travel—not to mention a bargain—and you can even have one of your stronger blokes carry it across land. (Pick one up in Yew. The only real use for a full-blown ship is to gun down sea serpents.) A sextant—available from Ephemerides, who lives ►

to tackle the 14 Desert Storm missions and The Flight of the Old Dog. The latter is the ultimate test: an interlocking series of missions involving multiple targets and tenacious defenders.

The game requires one megabyte of RAM, and while play is much smoother on an accelerated Amiga, it is still quite enjoyable on a standard machine. The hard-drive installation program is absolutely the best I've seen; it even includes online help. For documentation, you get a 100-page Flight Manual (the key to the copy protection), a 16-page folder of flight plans, and a four-page reference guide that includes hot-key listings for the controls.

If you can master the complexities, Megafortress will provide many hours of flying, dodging, and fighting.

Conquests of the Longbow: The Legend of Robin Hood

By Peter Olafson

IT HAS BEEN a long time, but ***Sierra On-Line***'s Amiga conversions of its animated adventures are finally catching up to the IBM originals. A case in point is **Conquests of the Longbow: The Legend of Robin Hood** ($59.95)—the company's first 64-color Amiga game.

First things first: The answer to the 64-color question is a resounding "yes!" Longbow looks even better than King's Quest V. Oh, some folks are bound to note that the soft lines of the IBM original are sometimes missing and that the blotchiness that afflicted Sierra's recent batch of 32-color Amiga games turns up in small doses. But, after a certain point, each additional color contributes less additional beauty. Hence, 64 Amiga colors can look pretty damn good beside 256 IBM colors, and Longbow looks pretty damn good. The game has a thick, craggy beauty and a much more solid, vivid existence; it's not just pretty pictures.

You control the famous bloke in green tights as he leads his

Continued on p.106.

CRIB NOTES

near the Lycaeum in northwest Britannia—will also prove handy while you're out there.

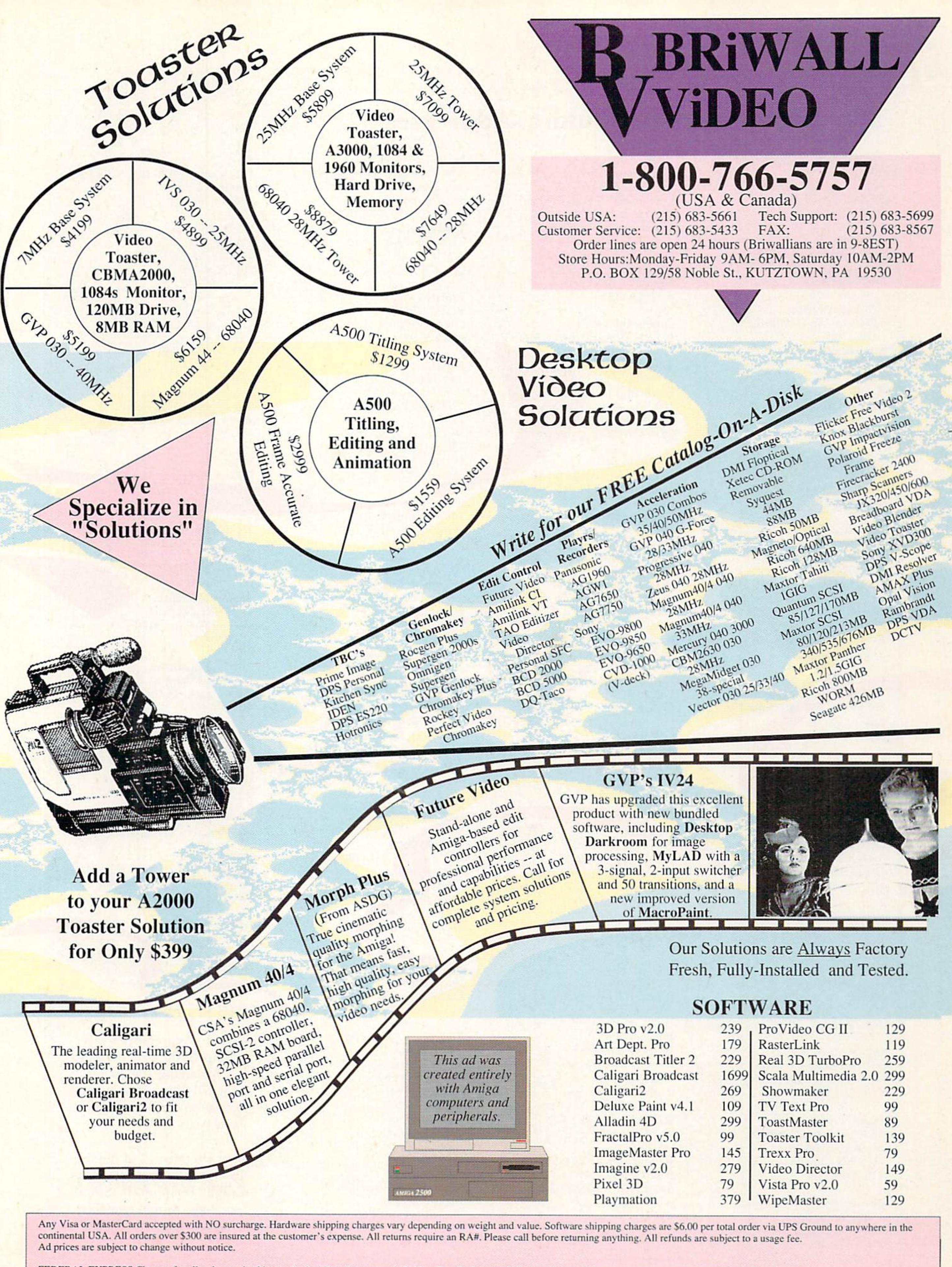
And you will quickly want to get a handle on how the Orb of Moons works; it flashes you via moongate to 20 places, depending on where it is cast. However, it will be so much deadwood unless you talk to Lord British first. There's more, too, but I wouldn't want to spoil things for you. (Not yet, at least.)

Don't beat your head against the rocks for too long. It starts to hurt after a while. And Ultima VI does throw up its share of rocks—goose chases, whose ultimate tie-in appears to have been left on the cutting room floor, but whose substance was not entirely stricken from the game. I learned this the hard way.

Take the ghost that haunts Skara Brae, for instance. Please. It's a neat sub-plot wannabe, and seems to proceed promisingly, but it just doesn't go anywhere. You can't solve the murder. There's no way to help him.

Finally, take your time. That big outside world will still be there when you're ready for it, and you're not quite ready to start to start liberating gargoyle-held shrines. Once you've slaughtered the winged ones in the throne room and had a good word with LB and his lieutenants, visit your room. Get outfitted. Explore the castle. And take the down ladder from the mage's lab in the castle's southwest corner. A spell in the sewers and the caverns beneath will soon put you straight. Who knows—you might even find something useful a little north of that underground lake. But that's another story.

Next month, cheats! The Avatar, Iolo, Shamino & Dupre, Ltd. will return in January. ❑



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AW Shucks!

Item: In September's Overscan (p. 8) the date for Babylon 5's airing was given as Nov. 27th. The airing has now been postponed to sometime in February 1993.

Item: On page 14 of August's Overscan, the price for Black Knight Peripherals' S.A.M. time-code converter was incorrectly given as $299. It is $199.

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From p. 102.
band of merry men (the whole crew familiar from the Errol Flynn classic) through Sherwood Forest and its environs, looking after the poor, plaguing the sheriff of Nottingham's men, and trying to help absent King Richard. (You may even get yourself a girl, eh?)

I wouldn't be so enthusiastic if this Christy Marx followup to Conquests of Camelot was simply a standard Sierra adventure in 64 colors, but there's an enormous amount to do in this eight-disker. Aside from learning the lay of the land (those trees aren't just scenery) and performing little quests, you'll also have to administer the till. You can even venture to test your mettle at archery, the quarterstaff, and the medieval strategy game of Nine Men's Morris. The scoring system doesn't rely purely on the traditional points for finding objects and solving puzzles, but on how much ransom you can raise for the absent good King Richard and the number of merry men who don't take a new job pushing up daisies.

In other words, this isn't simply a treasure hunt. Sure, you have to solve puzzles, but you also have to plot how *best* to solve them. Those alternate solutions (and five endings) give Longbow a feel closer to that of a role-playing or strategy game.

As in Camelot, there's a convenient map mode that allows you to move quickly to known locations (others appear as you discover them), and the period score is lovely.

The downside: Longbow is crawling-across-the-desert-without-Gatorade slow on a 68000-based Amiga—and Sierra recommends using faster Amigas. (Now that it's brought the graphics up to spec, perhaps Sierra will turn its attention to improving the speed.) And the new icon-based command system still spares the typing and spoils the experimentation. But either I'm getting used to that system or, courtesy of Longbow's alternate solutions and pleasant depth, there's a lot more game to enjoy here.

Cheers, Sierra. This is a good one. What's next?

SHORT TAKES By Peter Olafson



Pinball Dreams

Pinball on computer has always seemed to me a particularly pointless exercise when the real thing was so physical an experience. Until now. Pinball Dreams (*21st Century,* $39.95) replicates almost perfectly the feel of the real thing. It's all on two disks: four splendid theme tables, gravity, magnetism, lights, sound, special features that whip the ball around the table—the works. Scrolling is so slick I can't even think of it as scrolling. Indeed, playing Pinball Dreams is such an intuitive experience that it's quite possible to momentarily forget that this is only an Amiga. You can even jiggle the board by hitting the space bar. And yes, it does tilt.

The Lost Treasures of Infocom

They're baaa-ack. *Infocom*, last seen in these parts circa 1989, has regurgitated 20 of its classic text adventures. Lost Treasures of Infocom ($69.95) includes all five Zorks, the three quasi-Zorks of the Enchanter series, four mysteries (Deadline, Suspect, Witness, and Ballyhoo), three prime examples of science fiction as high comedy (Hitchhiker's Guide to the Galaxy, Planetfall, and Stationfall), curiosities like the H.P. Lovecraft-infested Lurking Horror (which introduced the use of digitized sounds) and the tripartite Moonmist (the beneficiary of Infocom's efforts to increase playability), and the single most difficult text adventure of all time: Suspended.

Infocom games made you realize that the best Amiga graphics weren't on the screen. They were in your head—courtesy of the wonderful prose and fist-whitening puzzles—and only the last two Zorks have even a semblance of graphics. If you've played these text adventures, you'll experience tear-to-the-eye déjà vu; it's like going back to a place you once lived. If you haven't, you're in for a right good treat.

Merchant Colony

An 18th-century trading-and-colonizing game, Merchant Colony (*Merit Software*, $29.95) is one of the dreariest things I've played in a long time. Maybe it's that I lost money while just following the trading tutorial. Maybe it's that even getting your ship into port is a supreme hassle. Maybe it's that the interface is anti-intuitive. Maybe . . . oh, why bother? Nice music and animation here and there, but I'll pass.

RoboSport

RoboSport (*Maxis*, $59.95) is a wonderful, sweet-tempered game of tactical combat. It's essentially a glamorous version of Omega: You program bounding cyborgs to go into any of three Breachish playfields and use their innate talents (and a nice range of weapons) to turn each other into little burned spots on the rug. And it's only programming in the loosest sense, so don't worry about Gotos and Setvars; just use the mouse to tell 'em where to go and what to do when they get there. The results play out in the form of a little movie.

It comes in both a hi-res version (which looks just like the Mac II original) and a lo-res version (which is flicker-free and emphasizes the cartoon quality of the dodo bird-like robots in closeup). Loads of options, too—among them serial and modem play with owners of the Mac and Windows versions. A good show all around.

Aquaventura

Well, look what the cat dragged in! Announced four years ago around the time of Chronoquest and re-scheduled at least five times, Aquaventura (*Psygnosis*, $49.99) seemed consigned to Amiga nevereverland.

It's difficult to imagine what took four years to refine. This is a passable, but unextraordinary, three-dimensional shoot-'em-up, in which you control an unattractive filled-polygon ship chasing attractive bitmapped targets around a somber undersea landscape. There's almost no excitement and nothing to drag you back. The packaging calls it "the damp patch in your software collection." I'll go along with that. Towel, anyone? ►

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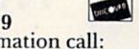
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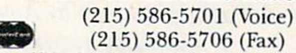
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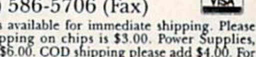
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MORE SHORT TAKES

COVERT ACTION

Covert Action ($59.95) sort of slipped out between World Circuit and Civilization, but don't let it slip away unseen. It's a delightful espionage game from Sid Meier (Pirates!, Railroad Tycoon, and Civilization), and its hybrid of arcade, strategy and menu-driven adventure is a decided change of pace for *MicroProse.* As Max (or Maxine) Remington, you'll do the usual spy-type things: following cars, planting bugs, breaking codes, watching buildings, or searching them in charming small-figure animation. The graphics aren't as jazzy as some of MicroProse's recent Amiga works, but don't let that sway you. This is plain old fun, and every game is different.

FIGHTING FOR ROME

Argh! Et tu, Fighting for Rome ($29.95), et tu? I hate beating up on *Merit Software* releases, but, really, what else is there to do?

With some refinements, this animated wargame (known as Cohort overseas) might have made a decent subgame in a larger, Romanesque conquest game. But on its lonesome, it's heavy on obtuse mechanism and light on payoff. (Troops stand toe to toe waving sticks at one another. Thrillsville.) Some nice features poke their heads out, but the action is invariably chaotic, and scrolling around the battlefield to see what kind of nonhavoc you're wreaking is next to impossible. Don't let the door hit your rump on the way out.

THE NEXT ROUND

BECOMING A HOBBIT—First came J.R.R. Tolkien's The Lord Of The Rings, now *Interplay Productions* has followed up with J.R.R. Tolkien's The Lord Of The Rings, Volume II: The Two Towers. Based on the second book in Tolkien's trilogy, this role-playing adventure picks up the hobbits' epic journey were it left off in the first game. You control the band of adventurers as they fight and outwit their way past the inhabitants of Middle Earth to come face to face with the mysterious Two Towers. (RS# 101.)

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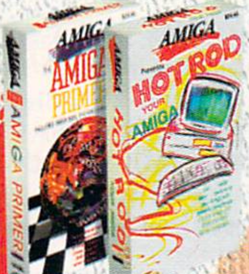
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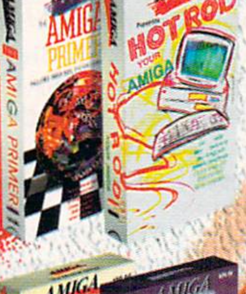
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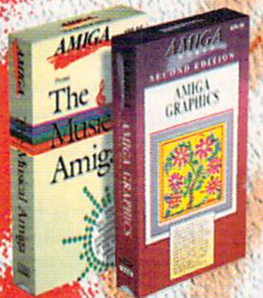
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TSP4: Games 2 Dyno-Wars—a strategic checker-style game. Kooties—assemble a bug before the computer beats you to it. BlockBuster is a colorful, well done Tetris-type game. Warrior is a fun shoot'em-up adventure game. MicroMan is a graphic maze game played with a joystick. Battle the computer's armies to take over the planet in Circe.
TSP3: Games 1 Crystal Caverns is an adventure game with randomly generated worlds--you'll never trash the same world twice! Dot2Dot is an adaptation of the classic 2-player connect-the-dot game. PizzaDeliveryMan has you running through the streets to get those pies to your customers. TinyBall is the world's smallest baseball game. Surround-Cycles is a high-speed arcade game, based on the light cycle races from the Disney movie Tron.
TSP2: Sounds Animal sounds, musical instruments and many, many more—43 sound samples in all!
TSP1: Maps of USA, Canada and Europe Hi-Res IFF brushes of all 50 US States, 10 Canadian Provinces and countries in Europe. Each map has a 3D extrusion effect with cast shadow.

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RK1: MegaBall - This disk contains the full-release version of MegaBall, complete with the level editor to create your own challenging worlds to conquer. This game is quite similar to Arkanoid and allows two players with stereo sound and 5 soundtracks! Special RK price, $14.95.
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TC34AB: Optimizer will permanently speedup your hard-drive or floppy disks. LCD Calc is a nice full-screen calculator. BBaseII is a useful database program. FixDisk will correct many problems with disks. BizCalc is a loan analyser. Interferon is a Tetris-type game. Nebula is a 3D space game. PicBase will allow you to track all the IFF images you have. Hate is a great Zaxxon clone.
TC33AB: Measures 1.0 is an incredibly useful utility that will convert any type of measurement to another. DiskLabeler is a database designed for storing and printing 3." disk labels. Jewels is a Tetris-esque game of action and strategy. Switch is a fun board-game. Gfxclipper will allow you to grab any screen and save it as an IFF picture. Softball Manager is a database for storing stats for softball—any number of leagues may be tracked. WBExec allows you to execute CLI commands from within the Workbench. Several Clipart images are also included.
TC32AB: Computer Coloring Book is a delightful program for children of all ages—comes with 15 pages of pictures to color again and again. Listmaker lets you make, edit, combine and print lists of words—great for those spelling tests! Moresmooth! scrolls text files smoothly on the screen and allows easy printing. Pocket Billiards lets you choose from several of the most popular pool games with realistic action. Texture allows you to create, manipulate and save (in standard IFF format) realistic fractal textured surfaces. Plague is a monster maze game. Also includes Screen Fader, Snowbench, and FlipBench.
TC31AB: Calendar Publisher is a professional-caliber calendar maker that is customizable. CrossCircuit is a 1 or 2 player action/logic game that calls for fast reflexes and thinking. APR is a much-needed printer utility. Pizza Delivery Man is a maze game where you deliver pies in your neighborhood. Multiplayer is a single program that will let you see IFF pictures/brushes or playback IFF sound samples. Also includes RAMgauge, 3-D vector objects and Hi-Res IFF brushes of maps and flags of European countries.
TC26AB: Word Search Maker lets you create word-search puzzles. TimeCalc is useful for anyone who has to calculate hours and minutes (great for adding up times of CD's to make tapes!) Drugbusters is a fun game where you get rid of cigarettes, booze, pills and needles. Wordfinder lets you search binary or text files for a particular word or string (good for getting hints in your adventure games!). KeyClick will add a small audible click to your keys and MouseClick will do the same for the mouse buttons. Seawar is a game between the Allied Navy and the Empire Fleet. Plus Early American 3-D vector objects, digitized sound effects, and a directory program.
TC25AB: ScreenToIFF captures your screen to an IFF file. PopColors lets you change the colors of your Workbench screen. Warrior is a fun shoot'em-up/adventure game for one or two players. Kaleidoscope is a line drawing program. Blockbusters is a game where you get rid of blocks by pushing matching blocks into them. Amidemo will show-off your Amigas ability to do solid-polygon animations. Microscope lets you examine memory at any location. Also includes Hi-Res IFF brushes of all 50 states and 10 Canadian provinces, nine digitized sounds and two small disk utilities and printer utility.
TC24AB: TableMaker is a tool for effortlessly building numerical tables. Kooties is a fun game where you have to assemble a bug before the computer beats you to it. HyperText lets you put links in a text file to other text, graphics, sound, animation, ARexx and other applications. The Little Black Book is a wonderfully useful telephone and address book. Color Logic is a MasterMind-type game. Also includes several disk and memory utilities—and some animal sound effects to top it off.
TC23AB: WhereIs lets you quickly and painlessly find a misplaced file on your drive. Select creates a window from which you can run your favorite programs. MatheMagic lets you find the day of the week for any date in the century, also lets you enter statistical data to be analyzed, graphs data, and solves linear algebraic equations. Pointer List Maker lets you create your own pointers or import pointers from other programs and save them in a disk file. Dyno-Wars requires more strategy and thought than your regular checker board game. Also includes Mr. Monster and Trilion games, 3-D objects, six sound effects and an animation of a pretzel.
TC22AB: Amiga Checkbook is a fast checkbook manager with check printing ability, budget analysis, and a report writer. AmiCrypt is a file encryption/decryption tool to password-protect any file...a must for security. WaveSyn lets you design musical instruments and waveforms for use in other programs. It also lets you play your keyboard like a piano. Cinco is a game where you try to get five X's in a row before your opponent does. AlterCLI lets you change attributes of your CLI window (width, title, depth, height, location, colors) with a single command—very useful for scripts. Also includes an animation by renowned Amiga-artist Lou Markoya, as well as 3-D objects.
TC21AB: Circe is a "risk-style" game where you battle the computer to take over the planet. Batchman allows you to execute CLI programs, batch files and ARexx scripts by simply clicking on a gadget. Colors prints color test sheets and assigns RGB values to printer and screen output....absolutely invaluable to achieve the best color printing results. Easyfile is a powerful database for home or a small business. Sprite Editor lets you easily create animated sprites. Plus 3-D fruit objects and five sampled sounds.
TC16AB: Cyberscape generates complex 3-D vector objects of terrain and saves your objects in Sculpt or Turbo-Silver format. Mathplotter graphs mathematical equations in both 2-D and 3-D. Double Print prints your text files on both sides of the paper.



AmigaPlot featured on TSP14

Metamorph, a graphic adventure game, Tinyball—the worlds smallest baseball arcade game and 6 digitized sound effects.
TC15AB: Labelmaker is a very easy to use label program. SurroundCycles, a high-speed arcade game. Dot2Dot, an adaptation of the classical connect-the-dot game. A tutorial on animation techniques by Amiga-artist extrordinaire Brad Schenck complete with one of his animations. Also includes a collection of clip-art and more animal sounds.
TC14AB: AmigoFile is a database and address book. Graph 3-D lets you visualize complex data in a 3-D manner and save the results. Spectrogram analyzes and displays digitized sounds. Pteronadonaball—an animation by Lou Markoya. Also includes 3-D Tic Tac Toe, 3-D objects, food clip-art, and sampled sounds.
TC13AB: StrucGen lets you create gadget, text, bitmap, and window structures and writes the C source code for you. LifeCycles plots your biorhythms. Create spectacular images with Mandelbrots. Look, a CLI utility that helps you find files on your disk quickly and easily. Plus 3-D objects, holiday clip-art, an Amiga Flight animation, drive head cleaning utility, and technical discussion on how AmigaDOS stores information on disk.
TC12: TJFormat formats disks that AmigaDOS normally wont. ChartMaster is a powerful graphing tool. MoreCandy generates an assortment of colorful graphic patterns and allows you to save them to disk. Shark, a game where you have to eat all the little perch you can catch to stay alive. Plus B&W clip-art, spaceship 3-D vector objects, an animation, and Speakeasy (C source code for the programmer to add speech to C programs).
TC11: DiskSalvage will fix corrupted disks and recover deleted files. IconMeister is an advanced Icon editor. AlienDuel is a fast, shoot'em-up game. Crystal Caverns is a colorful, graphic adventure game like the arcade game. Also includes an animation, sound samples, 3D dinner table objects, and Hi-Res monster clip-art.

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THE LAST WORD

Kudos, complaints, comments, concerns, and contributions from our readers.

To Make Me Happy...

As to *AmigaWorld*'s content, I would like to see more comprehensive video and multimedia coverage and (I'm dreaming here) the complete extirpation of game reviews, tips, and ads. I think your magazine should focus on what sets the Amiga apart from the others: multimedia, graphics and desktop video. Certainly the platform is being utilized for broad-based personal computing, but it's breaking new ground in these specialized applications. When's the last time you ripped open a new database package, breathing hard and eager to put it through its paces? Probably not recently, but we both know how we felt when we first double-clicked on AmigaVision, DeluxePaint, and the Video Toaster.

Adam Alonzo
Dayton, Ohio

Pro Calc Protest

With regard to Daryell Sipper's review of Professional Calc (Sept., p. 64), there are a number of the program's features that I feel are important, but that Sipper neglected to mention. The first is the speed of the program. A great deal of time and effort was spent in making frequently used functions—such as screen update, disk loading, spreadsheet edits, and so on—as fast as possible.

In regard to the above functions, I believe that Pro Calc is still the fastest spreadsheet on the market. The tool bar across the top allows quick access to important editing functions. There is an ARexx spreadsheet function that allows the user to create his or her own functions (a powerful feature not available in any spreadsheet package on any platform that I know of). Also, Sipper barely mentioned the depth and ease of use of the graphing tools available. Short-changed as well were the style tags, cell notes, multiple fonts on the spreadsheet display, color dithering on the graphing display.... The list just goes on and on.

I understand that space is a consideration in any review, but not even mentioning most of these features and then advising the user to buy MS-DOS spreadsheets because of their larger feature list makes little sense to me. I feel that *AmigaWorld* has done a disservice to the Amiga community in trying to shoot down what, in my opinion, is the best spreadsheet available for the Amiga and a very competant offering in its price range for any platform.

Michal Todorovic
Author of Professional Calc
Ventura, California

Almost a Renegade

As a long-time C-64 and 128 user, I was on the brink of buying an IBM clone when I was introduced to the Amiga by a friend who was selling his A500, which was loaded with 2.5 megs of RAM and accompanied by an external 3.5-inch drive and an Amiga monitor. Well, for $450 I purchased my friend's Amiga, and I couldn't be happier. Boy, do I love my Amiga!

I recently bought Final Copy and Professional Page 2.1, and these are just what I need for my business, especially in the typesetting department.

Chris Williams
Neptune, New Jersey

Although I feel betrayed by Commodore's abandoning the 1000, I remain very pleased with the quality of it.

The Good Old 1000

When I bought my A1000, I assumed (foolishly, it turned out) that there would be an expansion system that would allow me to upgrade with plug-in cards that wouldn't cost a fortune. I see that GVP is really making some great boards for the 2000, the 3000, and the 500, but their cost is about the same as a complete IBM clone system! Although I feel betrayed by Commodore's abandoning the 1000, I remain very pleased with the quality of it. I have never had the slightest bit of hardware trouble with it over the years. From what I read in your magazine, that's a much better track record than its successors.

Merritt J. Rucker
Belen, New Mexico

The All-Around User

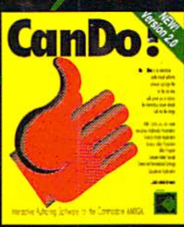
Though I don't mind your devoting some space to specific uses, I think that there is in *AmigaWorld* just too much animation/art/graphics month after month. Yes, those things are both interesting and fantastic, but what about all the other wonderful stuff out there? I'm one of those "all-around" users, doing finances, telecommunications, word processing, databases and some minor desktop publishing. And I firmly believe that I have more "user" power in my Amiga system than all of the PC look-alikes in the building where I work.

As far as magazine format changes are concerned, I think you're heading in the right direction, but you need to go a little further. I like the header box for the reviews, but I think it should also be added to the Game Preserve. After all, everyone would like to know if a game is hard-drive installable, 2.04-compatible, accelerator-compatible, and so on, before we shell out our hard-earned money

Michael J. Gratis, Sr.
Buzzards Bay, Massachusetts ■

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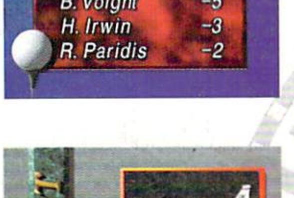
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